Center of Excellence
for Faculty & Undergraduate Student Research Collaboration

Scholarly Contributions 2001-2003

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University of Wisconsin - Eau Claire
ON THE COVER

Cover design by Sheila Pederson. The background for this cover depicts architectural elements of Schofield Hall, originally the entire housing for the Eau Claire State Normal School later to become the University of Wisconsin-Eau Claire. These architectural features reflect the importance of teaching and research as cornerstones of the university. Research entails discovery and creation of new knowledge while teaching provides the dissemination of knowledge to current and future students for the benefit of society. Through the Center of Excellence these activities are combined and contribute to the unique nature of the UW-Eau Claire undergraduate experience.
This edition of Scholarly Contributions of the Center of Excellence for Faculty and Undergraduate Student Research Collaboration demonstrates the broad array and quality of faculty/student collaborative research characteristic of the University of Wisconsin-Eau Claire. The 2001-2003 biennial volume documents more than 270 peer reviewed journal articles and presentations at professional meetings with UW-Eau Claire undergraduate students as authors and co-authors. Included is the work of faculty and students from twenty-eight academic departments. In all cases a complete citation of the work is provided and in most instances a published abstract is also included.

The UW System Board of Regents designated UW-Eau Claire as the Center of Excellence for Faculty and Undergraduate Student Research Collaboration in 1988. Through this Center we engage undergraduate students from all disciplines in collaborative research projects with faculty mentors. UW-Eau Claire is now a leading institution within the State and nation focusing on research in the undergraduate experience and has been recognized for its undergraduate research and creative projects both by the Council on Undergraduate Research and more recently in U.S. News and World Report “America’s Best Colleges 2004.”

Growth of the Center of Excellence testifies to the willingness of our faculty to engage students in this type of experiential learning. It speaks to excellence beyond the classroom and to an academically rich environment where faculty and undergraduate students engage in important scholarly pursuits. The research results reported in this volume contribute to the academic profession and to the professional literature in a broad array of academic disciplines.

Christopher T. Lind, Ph.D.
Director, Center of Excellence
The Center of Excellence for Faculty and Undergraduate Student Research Collaboration was established at UW-Eau Claire in 1988 by action of the Board of Regents of the University of Wisconsin System. This Center was built on a quarter century tradition of engaging students in collaborative research with faculty scholars and incorporating research into the undergraduate experience.

The goals of the Center include (1) enhancing the quality of undergraduate education by providing students with an opportunity to participate with faculty in research projects, (2) keeping the undergraduate curriculum vital and updated by incorporating the results of current research into the curriculum, (3) facilitating collaborative research among faculty and students representing diverse undergraduate programs in order to identify and address problems requiring multidisciplinary solutions, and (4) encouraging undergraduate students by way of their successful research to consider advanced studies in their disciplines.

The Center has provided students with an opportunity for “hands on” experience in research, presentation of results at the annual UW-Eau Claire Student Research Day, and encouragement to present findings at meetings of professional organizations.

Faculty/undergraduate student research collaboration will continue to be a hallmark of the undergraduate degree at UW-Eau Claire and the Center of Excellence for Faculty and Undergraduate Student Research Collaboration will continue to support this faculty effort.

The Center operates three programs that provide grant support for faculty and students engaged in collaborative research. These programs include Faculty/Student Research Collaboration, Summer Research Experiences for Undergraduates, and Student/Faculty Travel for the Presentation of Research Results. In addition an Annual UW-Eau Claire Student Research Day is held during the Spring Semester to disseminate the results of faculty/student research collaborations.

The Center is funded largely with student differential tuition funds allocated for collaborative research. These student funds are augmented with support from the UW-Eau Claire Office of Research and Sponsored Programs, the UW System Undergraduate Initiative, the UW-Eau Claire Foundation, Inc., and other extramural funding sources.

*Excellence: Our Measure, our Motto, our Goal!*
Publications and Presentations
Authored and Co-Authored by University of Wisconsin-Eau Claire Undergraduate and Graduate Students

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SOCIAL NETWORKS: A COMPARISON OF RISK BEHAVIORS IN WOMEN AND THEIR BEST FRIENDS. Melyssa Heinz, undergraduate student, with Rosemary Jadack, faculty, same department.


Data shows increasing levels of risk behaviors in women, including smoking, alcohol/drug use, and unprotected sexual activity, putting them at risk for negative health outcomes. Researchers have described the importance of peer influence in the decision to engage in risk behaviors, especially those peers belonging to core social groups. Social network analysis focuses on patterns of risk behaviors among close friends, relatives, and acquaintances, and examines how group membership and social norms interrelate to foster or prevent risk behavior. The purpose of this study is to describe the social network characteristics of women and to explore the relationship between risk-taking of respondents and their best friends. A convenience sample of 100 women is being recruited from a rural health department in Western Wisconsin. To date, 40 persons have been interviewed; their mean age is 22 years (SD=.4). Respondents were surveyed about social network characteristics, types of support provided by members of the network, and risk behaviors (drug/alcohol use, sexual risk behaviors, tobacco use, helmet/seat belt non-use, inactivity). Results showed that persons had an average of 7 persons in their social network. The networks had a mean density of .78 (a measure of connectedness between network members), and a mean multiplexity of 2.9 (a measure of the number of social support types provided by network members). Of the sample to date, 87% of the respondents were able to identify a best friend. Paired t-tests showed that best friends provide more types of support activities and were more connected to the overall networks. These results provide nurses with important data that can be used to develop interventions that prevent risk behaviors in individuals and those in their social networks.

PERCEIVED BENEFITS AND BARRIERS TO PARTICIPATION IN MENTALLY RESTORATIVE ACTIVITIES AMONG COMMUNITY-DWELLING ELDERS. Elizabeth Oberg, undergraduate student, with Debra Jansen, faculty, same department.


Promoting health and functioning are essential to well-being as people grow older. Based on the Kaplan Attention Restoration Theory, exposure to mentally restorative activities, such as observing nature, is associated with improved concentration and feelings of greater mental energy and refreshment. However, little research and few instruments exist pertaining to the benefits and types of restorative activities engaged in by elders, a group in need of means to promote optimal health and functioning. Two studies were conducted to determine the types of restorative activities engaged in by community-dwelling elders, the
perceived benefits of these activities, and various barriers restricting individual participation in these activities. In the first study, 30 elders (28 females, 2 males; M = 75 years of age) were interviewed to identify activities perceived to be restorative, as well as benefits and barriers to participation. Based on the interview information, the Restorative Activity Assessment (RAA) instrument was developed. In the second study, the RAA was administered to 33 community-dwelling elderly (25 females, 8 males; M = 76 years of age) to determine the benefits of individual activities. It’s hoped that the information will be helpful in maintaining or perhaps improving health and functioning in the elderly.

**ALLIED HEALTH**


Five years of session plans that were used successfully with inmates behind bars will be presented by topics and themes. A database of these session plans, including responses of inmates and lists of songs, songbooks, CDs, and videotapes relating to anger management, will be included in CD-ROM.


Patients on the Ventilator Unit at Lakeside Nursing and Rehabilitation Center will engage in passive and active harp engagement. A baseline of each patient’s blood pressure, pulse oximetry, and respiratory rate will be obtained and compared with measures of blood pressure, pulse oximetry, and respiratory rate before, during, and after passive and active harp engagement. Patients and staff at Lakeside will assess patients’ emotional state, presenting mood, and mental outlook before and after each session of harp engagement. Individualized programs of harp engagement will be developed for each patient based on responses to the harp engagement. Comparisons between passive and active harp engagement responses as well as comparisons of measures prior to, during, and after each harp engagement session will be made by Music Therapy student Jacque Petroni in conjunction with two other students. Dr. Mark Lindsay, Lakeside staff, and university professor Lee
Anna Rasar will assist in developing the research plan, completing IRB requirements, collating, analyzing, and presenting the data. Results from the study will present information about the results of passive and active harp playing on medical measures recorded for patients who are on ventilators, as well as implications for future research.


Understand and identify anger triggers and resulting vicious cycles of thought and behaviors and program musical interventions to lead to healthy anger management. Develop integration of music and art activities to target anger expression, processing and redirection. Broaden awareness of and acquisition of musical and non-musical resources for use in music therapy anger management programs.


DIAGRAMMING SURGICAL TECHNIQUES: AN ILLUSTRATED GUIDE TO RAT CORONARY ARTERY DISSECTION. Sara Betterly, Erin Kalla, and Mark Soderling, undergraduate students, with Bobby Pitts, faculty, same department, and Daniel Conklin, faculty, Biology. 4th Annual UW-System Symposium for Undergraduate Research and Creative Activity—Poster Presentation. Eau Claire, WI. 29 April 2003. P033.

The dissection of the rat coronary artery for physiologic experimentation is a tedious, labor intensive procedure. It is currently performed in very few laboratories for a variety of reasons. One reason for this underuse may be that there is no available illustrative documentation of this intensive procedure. There are several manuals on rat surgery but none of these address the rat coronary artery procedure studied herein. Thus, it is difficult to train research students in this technique because of the lack of an illustrative guide. Therefore, we documented the dissection of the rat left coronary artery to encourage more widespread use of said technique and improve training of research students. This was accomplished by combining several forms of illustrative media with technical documentation of the protocol into an easy to follow guide. The illustrative forms include black and white sketches and line drawings of anatomy and equipment, computer renderings using a variety of illustration software, video and digital camera images, and detailed high ratio/resolution color illustrations. The final product is of significance to the cardiovascular research community at large and to those training research students. This work was supported by the ORSP at UW-Eau Claire.

FORM. Mary La Venture, undergraduate student, with Deirdre Monk, faculty, same department. 4th Annual UW-System Symposium for Undergraduate Research and Creative Activity—Gallery Presentation. Eau Claire, WI. 29 April 2003. CA001.
Photography has the ability to borrow and transform objects and their meanings. This collaborative project using black and white and color photography examines knowledge and experience focused toward the human form as subject matter. This project involves research of other photographers and traditional artists to gain an understanding of the process in which a sense of intimacy is developed between the viewer and the subject. This body of work observes the dynamic and graphical qualities inherent in the human form. Research of the psychological and physiological processes involved in human interaction and perception were also considered in the production of this work. This photographic project was produced strictly using a large format camera with 4x5 negatives creating the ability to produce striking, large images.

**FARES (FORMERLY MOVIN’ ON UP-THE MAKING OF A STUDENT MOVIE).** Mary La Venture, Kristopher Martin, and Darrell Walters, undergraduate students, with Steve Terwilliger, faculty, same department.


Art students LaVenture, Martin, and Walters are involved in producing a movie from a play written by fellow University of Wisconsin- Eau Claire student, Maurice Urusquieta. Under the direction of faculty mentor Steve Terwilliger, the students have brainstormed, produced, directed, taped, and edited this production. Recent illustration graduate, Michael Jacobsen, produced professional storyboards for the movie while Liam Robinson and Mike Olson wrote and produced original scores for the soundtrack. Other art and theater students with expertise in needed areas have also been involved in the project. All actors are either current students or have recently graduated from this university. The student collaborators have researched information about directors and viewed master cinematography in order to gain more knowledge for this project. They have also documented the entire process through video clips, photographs, notes, and summaries developed along the way. This project will allow other students to become more familiar with the area of fine art film and movie production.

**ILLUSTRATED JOURNALS: A CATALYST FOR CREATIVE EXPRESSION IN THE K-12 CLASSROOM IN HIGHER EDUCATION AND FOR THE ART TEACHER.** Samantha Siker and Kasey Vlasak, undergraduate students, with Karen Horan, faculty, same department.

National Art Education Association National Conference, Minneapolis, MN, 4-6 April 2003.

Illustrated Journals are a catalyst for creative expression in the K-12 classroom, in higher education, and for the art teacher. This presentation will focus on visual communication and expression through the illustrated journal 1) in the art room as classroom activity; 2) within a variety of school disciplines; 3) as a reflective measure for field experiences in higher education; and 4) as artistic expression for the art teacher. The presentation will be illustrated with abundant examples from student journals and the presenters own personal journals. In addition to learning about journaling resources and materials, a variety of original and innovative techniques will be shown. A sample of the techniques will include drawing, painting, collage, photo alteration, embellishments, and enclosures.
DISTRIBUTION, MOVEMENT, AND BEHAVIOR OF COHO SALMON, DURING THE SUMMER REARING PERIOD IN THE ONION RIVER, A LAKE SUPERIOR TRIBUTARY. Matthew Allen and Ryan Franckowiak, undergraduate students, with David Lonzarich, faculty, same department. 

In their native range of western North America, coho salmon (Oncorhynchus kisutch) are exposed to a variety of population controls during their freshwater residency. The first summer is particularly stressful, as low stream flows create conditions that intensify biotic interactions, limit distribution and select for aggressive and sedentary behaviors. Testing the premise that flow conditions can shape the ecology of juvenile salmon, we examined how periodic summer flooding in a tributary stream of Lake Superior, Wisconsin affected the distribution, movement and social structure of a population established in the drainage in the 1970s. Snorkeling approximately 2 kilometers of the stream at ten-day intervals in summer 2000, we found that salmon occupied a wide range of habitats; that they moved a great deal; and that they were as likely to occur in aggregations as they were in social hierarchies. We suspect that the variable summer flows in this stream may alter the nature of intraspecific interactions by limiting the ability of salmon to establish social hierarchies. These results raise the possibility that coho salmon might be adapting to the environmental challenges of streams in this region.

REGULATION OF CADHERIN-BASED ADHESION BY EPHA4 REQUIRES INTERACTION WITH A PDZ DOMAIN PROTEIN. Joshua Bonis, undergraduate student, with Jon Scales, faculty, same department.

EphA4 tyrosine kinase activity disrupts cell adhesion in Xenopus blastomeres. We seek the molecular mechanism by which this disruption occurs using a blastomere dissociation assay. In this assay, we disrupt adhesion by expressing a chimeric version of EphA4 and test the ability of co-expressed proteins to rescue the degree of EphA4 induced dissociation. We demonstrated that 18 amino acids of the intracellular domain of cadherin can rescue EphA4-induced dissociation suggesting that this domain of cadherin mediates interaction with EphA4. Our current results describe the determination of the domain of EphA4 which is conversely required to mediate interaction with this region of cadherin. We have determined that deletion of the 3, carboxy terminal amino acid residues of EphA4 induces significantly less blastomere dissociation than full-length EphA4. Furthermore, truncated cadherin is unable to rescue this dissociation. The carboxy terminus of EphA4 appears to be a binding motif for PDZ domain proteins. The loss of interaction between cadherin and truncated EphA4 suggests that a PDZ family member may serve as a linker protein mediating an interaction between cadherin and EphA4. We propose that EphA4 is recruited to cadherin-based adhesion complexes by PDZ proteins, where it is available to interaction with ligand expressed on adjacent cells.

In our project we have isolated over 15kbp of genomic DNA corresponding to the eph receptor tyrosine kinase (RTK) gene EphB3 from a Xenopus laevis genomic library. We have sequenced about 12kbp of this genomic DNA to date. Computer analysis of the sequence has allowed us to identify one 3kbp EcoRI subfragment which we believe spans the transcription start site of the gene. We are now in the process of identifying those regions that correspond to transcriptional regulatory sequences of this gene. Once identified and characterized these transcriptional regulatory sequences will be subcloned into vectors and used to generate transgenic frogs. The expression of the transgene from these vectors will be restricted to the pattern of expression of the endogenous EphB3 gene since we are using the endogenous EphB3 transcriptional control sequences. The transgene that we will express using these sequences will encode a dominant-negative version of the EphB3 protein. The dominant-negative EphB3 protein will effectively negate the function of the endogenous EphB3 proteins only in those regions of the embryo normally expressing it. In this way, we will be able to identify and study specific roles the EphB3 RTK may play during development of Xenopus laevis.


We used pitfall traps to assess ground beetle diversity (Coleoptera: Carabidae) on two islands in the lower Chippewa River, Eau Claire County, Wisconsin, with rapidly expanding populations of reed canary grass, Phalaris arundinacea. We collected 233 individuals belonging to 17 species over four, 3-9 day sampling periods, May-August 1994. All species have been documented in Wisconsin and most are considered habitat generalists. Agonum fidele, A. extensicolle, Anisodactylus harrisii and Bembidion quadrimaculatum oppositum comprised 70% of all species collected. Seven species were common to both islands, with 13 species collected on Canarygrass Island and 11 species on Ski Jump Island. Carabid species diversity (Shannon’s H=2.01) was greatest on Canarygrass Island.

ROLE OF SEMICARBAZIDE-SENSITIVE AMINE OXIDASE IN METHYLAMINE EFFECTS ON ISOLATED HUMAN BLOOD VESSELS. Melissa Garney, Kris Hall, and Hanni Mueller, undergraduate students, with Daniel Conklin, faculty, same department, and Margaret Trent and Paul Boor, University of Texas Medical Branch. Experimental Biology –Poster Presentation. New Orleans, LA 21 April 2002.

PATTERNS OF ASSEMBLY ALONG A TOPOSEQUENCE IN PINE SAVANNAS AND BAYGALL GALLERY FORESTS. Katherine Hawkins, undergraduate student, with J. McDonald and A. Meador, Mississippi State University, and Evan Weiher, faculty, same department. 

Rarely have ecologists combined gradient analysis and the search for community assembly rules. We investigated how the strength of assembly rules varies among three plant communities along a soil toposequence, from upland dry-mesic longleaf pine savanna through slash pine - pitcher plant seepage savanna to wet-mesic baygall gallery forests located in southern Mississippi. While strong gradients facilitate comparisons between vegetation types, high species density (up to 40 species per 0.25 m² quadrat in slash pine savanna) and a significant relationship between mean quadrat species richness and bootstrapped stand-level richness both suggest that assembly rules are probably weak and composition may be random. We found no evidence for assembly rules in the uplands, however in both the seeps and the galleries two of three stands showed significant checkerboard scores (meaning that species are not independent). Moreover, the patterns tended to decrease in strength with elevation, in accordance with Schneider and Kay’s thermodynamic model. Species pairs responsible for the significant scores were primarily combinations of woody species or large graminoids and diminutive species. Pairs of ecological equivalents were also noted, but were less common. Guild proportionality (sensu Wilson) was tested, but not found. The replacement of small species by larger competitors helps explain the lack of significant guild proportionality. Evidence of assembly rules in this poor model system suggests that assembly rules may be more common than previously thought.

RUNNING DOWNHILL DOES NOT ALWAYS RESULT IN ENERGY SAVINGS. Heidi Heizer and Alexander Kluiber, undergraduate students, with Christy Carello, faculty, same department. 

Numerous studies have shown that running uphill results in an increase in cost. Yet, there have only been a few studies on the cost of locomotion for running downhill. In humans, running down a slight gradient results in a substantial energy savings. One would expect that those same savings would be seen in much smaller birds. We used Button Quail to examine whether a 45g bird benefits from running downhill. We measured oxygen consumption as a determinant of energetic cost at three different speeds on a level surface and a 10° decline. Button Quail are ideal avian subjects for this study because they are mostly terrestrial. We found that running downhill does not result in a lower cost in Button Quail. Our results suggest that in small animals the energy cost used for controlling forward momentum on a downhill slope is at least equivalent to any benefit gained from gravitational forces, or that small animals do not have enough mass to benefit from running downhill.

MODULATION OF NONPHOTIC CIRCADIAN RESETTING BY MANIPULATION OF BODY WEIGHT. Dennis Jeral, undergraduate student, with Daniel Janik, faculty, same department. 
Annual Meeting of the Society for Neuroscience, Orlando, FL. 2-7 Nov. 2002.

SPORE WALL ULTRASTRUCTURE IN THE ANTHOCERPHYTA. Tim Johnson, undergraduate student, with Wilson Taylor, faculty, same department.
Phylogenetic analyses of land plants up through the mid 1990s generally favored a basal position for the liverworts among the various extant land plant groups. Several lines of evidence lent support from the fossil record to this contention, including, 1) the production of permanent tetrads in several modern liverworts, 2) mesofossil remains (Lower Devonian) that are reminiscent of liverworts and 3) the ultrastructural similarities between Ordovician and Silurian cryptospores and the spores of certain members of the liverwort order Sphaerocarpales. The ultrastructural similarities are, however, found in dyads, for which no modern counterparts are known among the non vascular plants. Comparisons with coeval tetrad tetrads revealed few similarities with the Sphaerocarpales. More recent analyses have begun to consider the hornworts as at least an equally probable sister taxon to all other land plants. There is a conspicuous dearth of information on spore wall ultrastructure in modern hornworts. In this poster, we present information on the spore wall of representatives of four distinct genera - _Notothylas_, _Phaeoceros_, _Anthoceros_ and _Dendroceros_. The specimens examined have diverse ultrastructure. _Notothylas_ and _Phaeoceros_ have walls composed of at least three separate layers - the inner of which is fibrillar - as well as some kind of structural modification at the equator (cingulum) that forms a zone of weakness. These similarities support preliminary molecular phylogenies that unite these genera as sister taxa. The structural details, however, differ significantly. The species of _Anthoceros_ examined has fewer layers, no apparent equatorial zone of weakness and a fibrillar/tubular wall nearly throughout. _Dendroceros_ has a single layered verruculate wall around its endosporic gametophyte that is quite distinct from that of the other three genera.


Spores identified as _Cymbosporites echinatus_ were extracted from Lower Devonian sediments from the Woodbury Quarry, Herefordshire, England. The spores are patinate (possessing a much thicker distal than proximal wall) but their plant affinities are not known. No _in situ_ patinate spores have been reported. As the term suggests, patinate spores are presumed to have a thicker distal wall due to the addition of an outer layer (a “patina”) to an inner. Ultrastructural studies support this interpretation, with the structure of the thin inner layer being homogeneous to faintly lamellate, and the “patina” consisting of homogeneous and spongy regions. The patina covers the entire distal surface and the outer edge of the contact face. Suture morphology is unusual and extremely variable. Serial sectioning and single grain SEM/TEM preparatory techniques are expected to help unravel the complexities of suture morphology, but have yet to shed much light on the affinities of the parent plants.


PHYSICAL AND GENETIC ANALYSIS OF A BACTERIOCIN ENCODED ON A PLASMID FROM ENTEROCOCCUS FAECALIS 368. Chris Lamanna and Amy Sekorski, undergraduate students, with Sasha Showsh, faculty, same department.


Some bacteria are capable of producing and secreting chemicals called bacteriocins. These bacteriocins are proteins that generally exhibit a narrow spectrum of antimicrobial activity. Because of these antimicrobial properties bacteriocins are potentially applicable for use in treating infections and as food preservatives. Enterococcus faecalis SAS66 contains a conjugative plasmid (pAM369) that encodes for production of bacteriocin and resistance to antibiotics gentamicin and erythromycin. Analysis of the bacteriocin revealed that it is a heat labile protein with bacteriostatic activity against Staphylococcus aureus, Escherichia coli and Enterococcus faecalis. The bacteriocin is active over a wide pH range (pH=5 to pH=10) and is inactivated at temperatures above 40 degrees Celsius. We generated a mutant strain of Enterococcus faecalis that is unable to produce bacteriocin and isolated the plasmid. Using restriction analysis of the mutant plasmid we have identified the potential location of the bacteriocin gene.

A GRADIENT ANALYSIS OF OAK SAVANNA COMMUNITY COMPOSITION IN WESTERN WISCONSIN. Jennifer Meisel and Nicole Trushenski, undergraduate students, with Evan Weiher, faculty, same department.


MULTIVARIATE EFFECTS ON SPECIES RICHNESS IN FLOODPLAIN OAK SAVANNAS. Jennifer Meisel and Nicole Trushenski, undergraduate students, with Evan Weiher, faculty, same department.


In order to address the classic species richness - biomass relationship, we investigated how a suite of environmental factors affect species richness in 168 quadrats (0.25 m²) from 10 floodplain oak savannas located along the Chippewa River in western Wisconsin. There is a strong unimodal (humped) relationship between species richness and biomass, and for species richness and many environmental factors. These relationships appear to be triangular envelopes constraining richness below some upper limit. We used the EcoSim program (Gotelli and Entsminger) to test for triangular patterns. The upper limit of species richness significantly declined with increasing biomass, biomass heterogeneity (coefficient of variation), light reaching the soil surface, tree canopy cover, fire frequency, years since burning, and several measures of soil quality. The upper limit of species richness significantly increased with soil moisture. The next step is to use Structural Equation Modeling to untangle these multiple dependencies and to test Grace and Pugesek’s general model, which suggested that light reaching the soil surface is the main driver affecting species richness. We expect that our data will not conform to their model because of the complex effects of canopy trees on light reaching the ground (due to open-grown oaks within the savanna and adjacent forest patches).

RESPONSE OF BUTTERFLIES TO UNGULATE HERBIVORY ALONG AN ELEVATION GRADIENT. Lindsay Pawluk, undergraduate student, with Paula Kleintjes, faculty, same department, and S. Fettig, NPS Bandelier National Monument.

We measured how butterfly abundance and species richness respond to ungulate browsing of vegetation in Bandelier National Monument, NM. Studies show that overbrowsing of vegetation by ungulates causes soil erosion, changes in plant community composition and degradation of archeological sites. However, little information exists on how such changes affect invertebrate diversity. During the summers of 1999 and 2000, we monitored adult butterflies and vegetation in fenced ungulate exclosures and references areas (60mx60m). Sites were randomly established in 1998, and replicated within piñon-juniper woodlands (PJ;6300ft), ponderosa grasslands (PG;7200ft) and mixed conifer forests (MC;9200ft). We found 12 species of butterflies in the PJ, 16 in the PG and 15 in the MC. Across habitats and treatments, species richness was positively associated with butterfly abundance and percent forb cover and negatively associated with forb species richness. In 1999, percent cover and species richness of forbs, grasses and shrubs/trees did not significantly differ between treatments/habitat. Butterfly species richness and abundance did not significantly differ between exclosed and reference sites in any habitat either year, but numbers were highest in PG in June 1999 and MC in August 2000. Our results will continue to contribute to the understanding of the impacts of ungulates upon biological diversity and assist conservation efforts in the Bandelier Wilderness-Jemez Mountain Ecosystem.

DEVELOPMENT OF A VASOSPASM MODEL: HYDROGEN PEROXIDE EFFECTS IN ISOLATED HUMAN BLOOD VESSELS. Mark Phillips, Dana Schilling, and Nalee Xiong, undergraduate students, with Daniel Conklin, faculty, same department.


Our laboratory is exploring \(^{13}\)C stable isotope analysis of nucleic acids to investigate the activity of bacteria in nature. To validate measurements of \(^{13}\)C incorporation into nucleic acids as a proxy for bacterial activity, large quantities of pure DNA were extracted from a variety of chemoorganotrophic and methane-oxidizing bacteria grown in minimal media with glucose or methane as the sole carbon source. Ultrapure DNA and whole cells were analyzed by isotope ratio mass spectrometry (EA-IRMS). This analysis demonstrated that whole cells slightly fractionated against the heavy carbon isotope. Chemoorganotroph values were 1.3‰ to 3.0‰ less than the glucose carbon substrate. The pure DNA displayed further fractionation from the whole cell carbon. This pattern of fractionation was consistent among the chemoorganotrophs studied. These results suggest DNA may be a good document of nutritional history. Studies of methane-oxidizing bacteria are ongoing.

USING GRASS EPIDERMIS TO RECONSTRUCT PALEOGRAASSLAND COMMUNITY COMPOSITION. Glenn Schmukler, undergraduate student, with Kristina Beuning, faculty, same department.


THE USE OF INTRADISCAL ANTIBIOTICS FOR DISCOGRAPHY: AN INVITRO STUDY OF GENTAMICIN, CEFAZOLIN, AND CLINDAMYCIN. Amy Sekorski, undergraduate student, with Sasha Showsh, faculty, same department, and Heidi Klessig, Pain Clinic, Northwestern Wisconsin, Eau Claire.

HABITAT ENHANCEMENT FOR THE KARNER BLUE BUTTERFLY IN THE EAU CLAIRE RIVER BASIN, WISCONSIN. Jill Sporrong, undergraduate student, with Paula Kleintjes, faculty, same department, and J. A. Anklam, USDA NRSC-Altoona.


We are measuring the success of seeding wild lupine and other native prairie plants as part of habitat restoration efforts for the federally endangered Karner blue butterfly (*Lycaeides melissa samuelis*) in the Eau Claire River basin, WI. In fall 1997, 0.8ha of disturbed dry sand prairie were hand-seeded with 40% native grasses (2spp.), 50% nectar species (25spp.) and 10% wild lupine (*Lupinus perennis*) (3lbs/ha) as a result of a habitat mitigation project. By August 2000, the site contained a mean ±SE of 0.026 lupine/m², 39.9±0.69grasses/m² (32%), 67.0±1.45 forbs/m² (54%) and 14.5±0.60 Carex spp./m² (14.5%) and was occupied by Karners. In 2000, the Natural Resources Conservation Service of Eau Claire Co. began including lupine seed in all Conservation Reserve Program (CRP) native prairie plant mixes. As a result, we evaluated whether CRP sites were appropriate (e.g., suitable soil, light, vegetation, butterfly range) for lupine establishment and if so, how did they compare with a successfully seeded dry sand prairie. Of 32 sites, we found that half existed within the butterflies documented range. Three contained stands of lupine and one had Karners. In spring 2000, sites were seeded with a mixture of native grasses (8spp.) and forbs (14spp) and lupine was seeded in fall (25-40 seeds/m²). In spring 2001, successful germination of lupine/m² will be determined by transect counts (n=3) in each of 15 sites and compared with first year establishment of lupine in the seeded dry sand prairie. Sites will be evaluated for butterfly colonization in subsequent years.

EVALUATION OF A HABITAT CONSERVATION AND RESTORATION PLAN FOR THE KARNER BLUE BUTTERFLY IN WISCONSIN. Jill Sporrong and Chris Raebel undergraduate students, with Paula Kleintjes, faculty, same department, and S. F. Thon, Wisconsin DNR.


MULTIVARIATE ANALYSIS OF FLOODPLAIN OAK SAVANNA COMMUNITY COMPOSITION. Nicole Trushenski and Jennifer Meisel, undergraduate students, with Evan Weiher, faculty, same department.


Floodplain oak savanna communities are a threatened vegetation type (e.g., *Quercus macrocarpa - Andropogon gerardii* communities are listed as G1) but little is known about their understory vegetation. With help of the DNR, we located several areas of floodplain oak savanna along the Chippewa River in western Wisconsin. The chosen sites vary from 10% to 80% tree canopy cover (*Quercus macrocarpa* and *Q. ellipsoidalis*). 168 quadrats (0.25 m²) from 10 sites sampled a range of fire frequencies, soil qualities, tree canopies, elevations, and distances from the river. We used indirect gradient analysis with both DCA and NMDS of understory vegetation. The results from DCA showed stronger correlations with environmental factors than NMDS, but the overall patterns were consistent. Disturbance by fire, soil moisture, light availability, tree canopy, and soil quality were all significantly correlated with ordination scores. In a nutshell, *Andropogon gerardii* dominated a core community type, and the communities graded into (1) *Schizachyrium - Koeleria* sand barrens (if very sandy) (2) *Sorghastrum - Solidago* mesic prairie (if low soil P) (3) *Solidago*
Multiple quantitative Unionidae surveys of the same transect with specimen removal between surveys, Chippewa River, Wisconsin. Chris Wallace, undergraduate student, with Terry Balding, faculty, same department.


During the summer of 2001 we conducted 4 consecutive unionid surveys along the same transect on the Chippewa River, Wisconsin. We relocated all unionids after each survey. Our purposes in this study were to determine 1) if there was any vertical movement by unionids during normal water levels, 2) if smaller individuals would be recovered in later swim-over surveys, and 3) if there were differences in the sizes or species collected by swim-over versus digging surveys. From the 4 consecutive surveys of the same transect there were a total of 18 species found and 542 live unionids were counted (density of approximately 2.8 unionids/m2). Among the unionids collected were two Wisconsin Threatened and Endangered species, Plethobasis cyphyus and Tritigonia verrucosa. The dominant species were Potamilus alatus and Fusconaia flava, comprising nearly 57.4% of all the unionids. The data from this study provide some indication that within a 46-day period unionids may move vertically within the substrate. The data also show there is a significant difference in the mean standardized lengths for the 3 consecutive surveys (R2 = 0.9984, P ( 0.05). While there are only 3 data points and the range in size is slight, the data indicate swim-over surveys have a bias for larger unionids. Overall we found smaller unionids and a greater number during the digging survey than the swim-over survey. Additionally, some species and some sizes were under-represented during the swim-over survey compared to the digging survey. These findings indicate surveys intending to obtain community and population structure should use digging.
indicative of a more hydrophobic environment. Thus AmB seems to have a complementary face for amyloid fibrils but not the native protein. In addition, AmB interacts specifically with Congo Red, a known fibril-binding agent. In kinetic fibril formation studies, AmB was able to significantly kinetically delay the formation of Abeta 25-35 fibrils at pH 7.4 but not insulin fibrils at pH 2.

SYNTHESIS, STRUCTURE AND REACTIVITY OF IRON(II) COMPLEXES INCORPORATING BIS(2-PYRIDYL METHYL)AMINE AND TRIS(2-PYRIDYL METHYL)AMINE LIGANDS. Brian Buss, undergraduate student, with Michael Carney, faculty, same department.


Ethylene polymerization catalysts containing iron burst upon the scene in the mid 1990s. The catalysts, comprised of iron(II) bis(imino)pyridine complexes activated by methylaluminoxane (MAO), are extremely productive, forming up to 107 grams of polymer per gram of iron. Recent work suggests that the bis(imino)pyridine ligand is intimately involved in the catalysis reaction and performs more than just a supporting (ancillary) role. We sought to further explore the impact of ligand structure and electronic properties on the polymerization activity of iron(II) complexes. Specifically, we have synthesized and structurally characterized iron(II) complexes coordinated by tridentate bis(2-pyridylmethyl)amine and tetratdentate tris(2-pyridylmethyl)amine ligands. Tridentate bis(2-pyridylmethyl)amine and bis(imino)pyridine ligands are structurally similar; however, the former lacks the latter’s electronic delocalization and ease of reduction, allowing us to examine the impact of these differences on polymerization activity. Compounds in the present work have been characterized by a combination of x-ray crystallography, elemental analysis and various magnetic and spectroscopic techniques. These results will be presented along with a comparison of polymerization activity and polymer property data with that reported for iron(II) bis(imino)pyridine complexes.

REACTIONS OF HYDRAZINE WITH ALPHA-CYANOCINNAMATE ESTERS: AN UNEXPECTED FRAGMENTATION. Paul Erdman, undergraduate student, with David Lewis, faculty, same department.


The reaction between hydrazine and acrylate esters to give pyrazolinones is a well-established reaction. In the course of our attempts to prepare beta-aryl-alpha-cyanopyrazolinones, we treated the alpha-cyanocinnamate ester with hydrazine in ethanol. Whether under reflux or at room temperature, these reactions all gave the same product, which we have identified as the azine of the aromatic aldehyde from which the alpha-cyanocinnamate ester is prepared by a Knoevenagel condensation. The course of this reaction will be discussed, a putative mechanism will be proposed, and the limitations which this imposes on the synthesis of pyrazolinones by this method will be addressed.

UNRAVELING SUBSTITUENT AND CONFORMATIONAL EFFECTS IN THE OVERTONE SPECTRA OF ETHANOL AND ITS SINGLY HALOGENATED ANALOGS. Clinton Fenner, undergraduate student, with James Phillips, faculty, same department.
Local mode O-H vibrational spectra of the fundamental and first three overtone bands of vapor-phase ethanol (CH$_3$CH$_2$OH) and its halogenated analogs (FCH$_2$CH$_2$OH, CICH$_2$CH$_2$OH, and BrCH$_2$CH$_2$OH) have been measured. These spectra readily reveal the presence of multiple conformers in the vapor phase samples at room temperature. The vibrational bands have been assigned to specific conformers with the aid of ab initio calculations, and fits of the band centers to a Morse-like energy level expression have provided insight into how conformation and substituent electronegativity affect the mechanical properties of the O-H bond. Integrated band strengths have also been obtained, though at this point, the values reflect population-weighted conformational averages, since the bands of the individual conformers are significantly overlapped. These results will be compared to previous data for non-halogenated alcohols, which show clear trends in the intensity values that parallel the inductive nature of the O-H substituent. Recent attempts to address the effect of conformation on band intensity will also be discussed, these include recently obtained intensity values that have been computed using measured spectroscopic constants and ab initio dipole moment functions.


The copper-catalyzed aziridination of olefins by the iminoidinane PhINTs is a convenient method for the preparation of synthetically valuable aziridines. As part of a systematic investigation of ancillary ligand effects on the catalytic reactivity of copper(II) complexes in the olefin aziridination reaction, we describe a pair of new complexes supported by two closely related ligands that vary only in their denticity (tetradentate vs. tridentate). These ligands, derived from the macrocycle 1,5-diazacyclooctane, both support the formation of mononuclear copper(II) complexes that have been fully characterized by spectroscopic, electrochemical, and X-ray crystallographic methods. While the structural and electrochemical properties of these two complexes are quite similar, their reactivity in the catalytic aziridination of olefins is remarkably dissimilar: the complex supported by the tetradentate ligand is a poor catalyst, affording moderate yields of aziridine only after prolonged reaction times, while the complex supported by the tridentate ligand is an excellent catalyst, providing high yields of aziridine and short reaction times. A ligand-based structural basis for these observations will be presented.


In order to further delineate the fundamental properties of cysteine-ligated metalloenzyme active sites in biology, we have prepared and fully characterized a family of square-pyramidal metal(II)-thiolate complexes that model the active site topology of the non-heme

Benzhydrol reacts with active methylene compounds in refluxing formic acid to give products of substitution. The products of C-alkylation are obtained using beta-diketones, beta-ketoesters and Meldrum’s acid; nitriles, (cyanoacetic esters and malononitrile) give the products of Ritter reactions; diethyl malonate yields no alkylation product. The yield of reaction product correlates with the equilibrium enol content of the active methylene compound. The reaction fails in acetic acid solvent when benzhydrol is used as reactant, but proceeds slowly in the same solvent when benzhydryl formate is the reactant. It is suggested that the reaction is an S_N1 substitution of benzhydrol formate by enol nucleophiles.


The reaction of N-phenylpropanamide with two equivalents of butyllithium at 0°C gives the dilithio derivative as a 92:8 mixture of stereoisomers which reacts rapidly with aldehydes at 0°C to give a mixture of the syn and anti aldols in a ratio of approximately 2:3. The anti aldol adduct crystallizes from the crude reaction mixture. In the case of aromatic aldehydes, the reaction is accompanied by competing Cannizzarro-type reduction. The reaction path is interpreted in terms of competing Zimmerman-Traxler transition states for the irreversible addition.
CHROMIUM (III) 2, 6-BIS (IMINO) PYRIDINE COMPLEXES AS ETHYLENE POLYMERIZATION CATALYSTS. Danah Holman, undergraduate student, with Michael Carney, faculty, same department.  

Commercial ethylene polymerization catalysts currently produce nearly 22 billion pounds of polyethylene per year. These polymers are used in a wide variety of familiar applications including trash bags, grocery sacks, milk and detergent bottles, and various types of consumer packaging. In spite of their tremendous economic value, the catalyst structures are still rather poorly understood at the molecular level. The desire to model catalyst structure and, in turn, exert more control over basic polymer properties has led to the development of discrete transition metal complexes as polymerization catalysts. Such systems are called “single-site catalysts” because of their ability to produce extremely uniform polymers, which, in turn, yield plastic films and bottles with exceptionally high strength and clarity. Research by many groups over the past 15 years has extended the range of transition metals and coordination geometries that will support olefin polymerization. To further this work, we have synthesized a family of chromium(III) complexes supported by tridentate 2,6-bis(imino)pyridine ligands. These complexes have been characterized by x-ray crystallography, elemental analysis and various magnetic and spectroscopic techniques. These results will be presented along with initial polymerization data showing the impact of ligand structure on catalyst activity and polymer properties.

STRUCTURE AND BONDING IN THE NITRILE COMPLEXES OF BORONTRIFLUORIDE. Christopher Knutson and John Wrass, undergraduate students, with James Phillips faculty, same department.  

The structural chemistry of acetonitrile - borontrifluoride (CH$_3$CN-BF$_3$) and its analogs has attracted much attention over the past 10 years. The two primary reasons for this are that B-N bond distances measured for these species indicate an interaction that defies classification as a purely bonding or non-bonding interaction. Moreover, the structures display a marked sensitivity to chemical medium, which is best demonstrated by dramatic differences in B-N bond lengths between the gas phase and solid state; nearly 0.4 ú for CH$_3$CN-BF$_3$. We employ a combination of IR spectroscopy, x-ray crystallography, and computational chemistry to probe the structural changes resulting from both intramolecular effects (i.e. changes in the nitrile substituent) and intermolecular effects (changes in the surrounding chemical medium). Solid-state structures have been obtained for C$_6$H$_5$CN-BF$_3$, FCH$_2$CN-BF$_3$, CICH$_2$CN-BF$_3$ and ICH$_2$CN-BF$_3$, and they are all quite similar to CH$_3$CN-BF$_3$, though the halogenated complexes are slightly bent about the C-N-B linkage. Gas phase structures computed via B3LYP calculations reveal marked gas-solid structure differences, and in the case of FCH$_2$CN-BF$_3$, the difference in B-N distance is nearly 0.9 ú! Solid-state IR spectra all show nearly identical frequencies for the BF stretching and bending modes. The effect of an argon matrix on the structures of these species will be demonstrated through a comparison of frequencies from the argon matrix, the solid state, and the gas phase (from B3LYP calculations).
MULTISTEP SYNTHESIS EXPERIMENT FOR THE ORGANIC LABORATORY. Joel Lischefski, undergraduate student, with David Lewis, faculty, same department. 
National Meeting American Chemical Society, Orlando, FL, 7-11 April 2002.

Multi-step synthesis can be an important learning experience for the undergraduate student in the organic chemistry laboratory. We present a simple multi-step synthesis involving sequential hydrolysis of the anhydride formed by Diels-Alder reaction between cyclopentadiene and maleic anhydride, bromolactonization of the resultant diacid (which permits discussion of electrophilic addition of bromine to an alkene and intramolecular S_N2 substitution), and Fischer esterification of the product. This sequence has several advantages: each step involves a short reaction time and readily available reagents, produces high yields of crystalline solids that are easily purified by recrystallization, and produces little or no hazardous waste. One particularly attractive feature of the sequence is the fact that water is the solvent and recrystallizing solvent of choice for two of the three steps.

A ‘GREEN’ SYNTHESIS SEQUENCE EXPERIMENT FOR THE ORGANIC LABORATORY. Joel Lischefski, undergraduate student, with David Lewis, faculty, same department.

The use of “green” chemistry - chemistry that reduces or eliminates the need for toxic reagents or solvents - has become a priority as concerns about toxic chemicals in the environment increase. To this end, we have designed a synthesis sequence experiment for the organic chemistry laboratory in which all reactions are carried out using water as the solvent. In addition to being “green” based on solvent choice, this sequence also exhibits remarkable atom economy, a second principle of “green” chemistry - the elimination of wasteful reagents by reagents which are used in their entirety.

STRUCTURE OF GAN SURFACES - THE PERSISTENCE OF SURFACE CLUSTERS. Westley Manske and Philip Cannon, undergraduate students, with Marc Mc Ellistrem, faculty, same department.

Group-III nitride semiconductor research has led to the commercial realization of green-, blue-, and even violet-light emitting diodes (LEDs), wavelengths not attainable with most other semiconductors. Nitride-based devices have found use in traffic signals and are being considered for solid-state lighting, in part because high brightness LEDs can be made from the Group-III nitrides and their alloys. The wavelength of light produced by these devices can in principle be “tuned” over the entire visible spectrum by controlling the stoichiometry of AlGaNnN alloys. Significant advances in film quality of InGaN, which emit in the green to blue color range, will require an improved understanding of how material growth influences, and is influenced by, alloy composition. Our research into the surface morphology of GaN by low-energy electron diffraction and scanning tunneling microscopy has revealed that GaN forms surface clusters under a variety of conditions, even though electron diffraction indicates that the surface is still crystalline. We conclude that surface clusters form as a consequence of surface treatment, or re-form afterwards, and that...
the formation of these clusters is highly favorable. The interplay between surface structure and composition (that is, the Ga/In surface composition) is the focus of this research.

**THE CATALASE/PEROXIDASE ENZYMES FROM THE GRAM (+) BACTERIA, BREVIBACTERIUM FUSCUM.** Westley Manske, Michael Mbughuni, Jennifer Biesterveld, and Rebecca Siemer undergraduate students, with Marcia Miller-Rodeberg, faculty, same department. 


Catalase/peroxidase enzymes have two primary functions in organisms. In all obligate aerobes, catalase enzymes remove toxic hydrogen peroxide produced as a by-product of aerobic metabolism. Peroxidase enzymes oxidize organic and metal substrates with concomitant reduction of \( \text{H}_2\text{O}_2 \) to water. A principle role of plant and fungal peroxidases is the oxidation of aromatic compound side chains for lignin synthesis and/or degradation. Because some bacteria, such as *Brevibacterium fuscum*, utilize aromatic hydrocarbons as a carbon and energy source, a role of bacterial peroxidases may be to remove extraneous side chains from aromatic compounds, which are subsequently further degraded. In our effort to understand the chemistry of the degradation of aromatic hydrocarbons by Gram (+) bacteria, we have identified and characterized two different catalase/peroxidase enzymes from *B. fuscum*. The enzymes have been separated using standard purification techniques of ammonium sulfate fractionation and ion exchange and hydrophobic column chromatography. Both enzymes have optical spectra consistent with a heme active site. These two enzymes are readily differentiated by their catalytic properties and apparent subunit size, as determined by SDS-PAGE. The physical and catalytic properties of the two enzymes from *B. fuscum* will be presented.

**SYNTHETIC APPROACHES TO MODELING THE ACTIVE SITE OF THE NON-HEME IRON ENZYME SUPEROXIDE REDUCTASE.** Heather Moore, undergraduate student, with Jason Halfen, faculty, same department. 


Organisms are protected from the toxic effects of superoxide, an unavoidable by-product of aerobic respiration, by a family of superoxide scavenging metalloenzymes, including the recently described superoxide reductases (SORs). Spectroscopic and crystallographic studies of these SORs reveal an active site comprised of a single, non-heme iron ion bound by five protein-derived ligands including four histidines and one cysteine. We have recently targeted synthetic models of the SOR active site for preparation, structural and spectroscopic characterization, and reactivity studies. The pyridyl-appended macrocycle 1,5-bis(2-pyridylmethyl)-1,5-diazacyclooctane, 1, which mimics the array of histidines in the SOR active site, reacts with \( \text{FeCl}_2 \) to form the trigonal prismatic, dichloroiron(II) complex 2. In contrast, reaction of 1 with hydrated \( \text{Fe(BF}_4)_2 \) provides a novel tetrafluoroborate- ligated complex 3. Reactions of 2 or 3 with thiolates provide access to model complexes that mimic the structure of the active site of superoxide reductase. The structural and spectroscopic properties of these compounds and their precursors will be discussed.
SPECTROSCOPIC ANALYSIS OF CYANINE DYE - CYCLODEXTRIN COMPLEXES. Erin Moritz, undergraduate student, with Melville Sahyun, faculty, same department.  

This research is concerned with the spectroscopic properties of complexes formed between cyanine dyes and beta-cyclodextrin hydrate (B-CD). The dyes used were 3,3'-diethylthiacarbocyanine iodide (n=1 or DTCI), 3,3'-diethylthiadi-carbocyanine iodide (n=2 or DTDCI), and 3,3'-diethylthiatricarbocyanine iodide (n=3 or DTTCI). We expected these dyes might display increased hyperpolarizability on complex formation, increasing their capabilities as frequency doublers. Such properties are of interest in fields of image capture, optical communications, fluorescence microscopy, and photodynamic therapy. Analytical methods used were absorption spectroscopy, fluorescence spectroscopy, and Hyper-Rayleigh Scattering (HRS), also known as second harmonic light scattering, which allows estimation of hyperpolarizability by comparison to a reference compound. We found that all three dyes form B-CD inclusion complexes, which may be 1:1 or 2:1, dye to cyclodextrin. Of these complexes only the complex with n=1 showed enhanced hyperpolarizability compared to the dye in solution. Under conditions where complexes form, dye tends to form aggregates in absence of B-CD. Dyes and complexes are fluorescent. On the other hand, we found that aggregates in solution may dissipate photoexcitation energy by dissociation, a heretofore unreported reaction of dye aggregates. Also we found that the dyes form adsorption complexes with silver nanoparticles; these complexes are highly hyperpolarizable.

AMPHOTERICIN B DELAYS AMYLOID FIBRILLIZATION. Rachel Nauss and Theodore Weiland, undergraduate students, with Scott Hartsel, faculty, same department.  
Biophysical Society Meeting, San Antonio, TX, 1-5 March 2003.

The antifungal agent Amphotericin B (AmB) is one of a handful of agents shown to slow the course of animal model prion diseases. We propose it is possible that AmB may act to physically prevent conversion of the largely alpha-helical prion protein to the pathological protease resistant beta-sheet isoform in prion disease. Congo Red and other small molecules have been reported to directly inhibit amyloidogenesis in both prion and Alzheimer amyloid peptide model systems by specific binding. This binding is thought to either directly block fibril propagation or “overstabilize” the pathogenic isoform so that it is not flexible enough to induce other proteins to misfold. To assess whether AmB is capable of preventing amyloidogenesis as does Congo Red, we have used the insulin fibril and Aâ 25-35 amyloid model fibril systems. AmB binds strongly to both insulin (Kd= 1.1 ìM) and Aâ 25-35 amyloid (Kd= 6.4 ìM) fibrils, but not to native insulin. Binding is characterized by a red-shifted AmB spectrum indicative of a more hydrophobic environment. In kinetic fibril formation studies, AmB was able to significantly kinetically delay the formation of Aâ 25-35 fibrils at pH 7.4 but not insulin fibrils at pH 2.0. We have further investigated the effect of AmB on putative channel formation by Aâ 25-35.

CAVITY RINGDOWN ABSORPTION SPECTRUM OF 2-CYCLOPENTEN-1-ONE IN ITS LOWEST (N, *) TRIPLET STATE. Nathan Pillsbury, undergraduate student, with Stephen Drucker, faculty, same department.  
Molecular triplet states are often important photochemical intermediates. Characterization of triplet potential energy surfaces is therefore an important goal. This goal has stimulated an effort to improve computational methods for treating triplet states. For a few small molecules, the lowest triplet state has been characterized spectroscopically, providing important benchmarks to evaluate computational techniques. However, spectroscopic data are sparse, due to the difficulty of measuring spin-forbidden singlet-triplet transitions. We present here the first direct spectroscopic study of 2-cyclopenten-1-one (2CP) in its lowest triplet \((\pi^*, \pi^*)\) state. We have used the highly sensitive cavity ringdown (CRD) technique to record vibronically resolved absorption spectra of 2CP vapor and its 5,5-deuterated derivatives near 385 nm. The very weak (\(\text{max} < 1 \text{ M}^{-1}\text{cm}^{-1}\)) absorption band system in this region is due to a spin-forbidden \(D^* \rightarrow S^0\) electronic transition originating in the ground state. The origin band for the \(-d_0\) isotopomer was observed at 25,964 cm\(^{-1}\). Other assigned bands have permitted determination of excited-state fundamental frequencies for ring-bending (37 cm\(^{-1}\)), ring-twisting (239 cm\(^{-1}\)), and carbonyl deformation (346 and 432 cm\(^{-1}\)) vibrational modes.

**THE LOWEST-ENERGY TRIPLET STATE OF 2-CYCLOPENTEN-1-ONE: CAVITY RINGDOWN ABSORPTION SPECTRUM AND RING-BENDING POTENTIAL-ENERGY FUNCTION.** Nathan Pillsbury, undergraduate student, with Stephen Drucker, faculty, same department.


The room-temperature cavity ringdown absorption spectra of 2-cyclopenten-1-one (2CP) and deuterated derivatives were recorded near 385 nm. The very weak (\(\text{max} < 1 \text{ M}^{-1}\text{cm}^{-1}\)) band system in this region is due to the \(T^* \rightarrow S^0\) electronic transition, where \(T^*\) is the lowest-energy \((\pi, \pi^*)\) state. The origin band was observed at 25,963.55(7) cm\(^{-1}\) for the undeuterated molecule and at 25,959.38(7) and 25,956.18(7) cm\(^{-1}\) for 2CP-5-d\(_1\) and 2CP-5,5-d\(_2\), respectively. For the \(-d_0\) isotopomer, about 50 vibronic transitions have been assigned in a region from -500 to +500 cm\(^{-1}\) relative to the origin band. Nearly every corresponding assignment was made in the \(-d_2\) spectrum. Several excited-state fundamentals have been determined for the \(-d_0/-d_2\) isotopomers, including ring-twisting (\(v_{29} = 238.9/227.8 \text{ cm}^{-1}\)), out-of-plane carbonyl deformation (\(v_{28} = 431.8/420.3 \text{ cm}^{-1}\)), and in-plane carbonyl deformation (\(v_{19} = 346.3/330.2 \text{ cm}^{-1}\)). The ring-bending (\(v_{30}\)) levels for the \(T^*\) state were determined to be at 36.5, 118.9, 213.7, 324.5, and 446.4 cm\(^{-1}\) for the undeuterated molecule. These drop to 29.7, 101.9, 184.8, 280.5, and 385.6 cm\(^{-1}\) for the \(-d_2\) molecule. A potential-energy function of the form \(V = ax^4 + bx^2\) was fit to the ring-bending levels for each isotopic species. The fitting procedure utilized a kinetic-energy expansion that was calculated based on the structure obtained for the triplet state from density functional calculations. The barrier to planarity, determined from the best-fitting potential-energy functions for the \(-d_0, -d_1, -d_2\) species, ranges from 42.0 to 43.5 cm\(^{-1}\). In the \(T^*\) state, electron repulsion resulting from the spin flip favors nonplanarity. The \(S_0\) and \(S_1\) states have planar structures that are stabilized by conjugation.

**SYNTHESIS AND REACTIVITY OF CHROMIUM (II) AND CHROMIUM (III) COMPLEXES INCORPORATING BIS (2-PYRIDYMETHYL) AMINE AND TRIS (2-PYRIDYMETHYL) LIGANDS.** Nicholas Robertson and Sara Hayward, undergraduate students, with Michael Carney, faculty, same department.

Chromium ethylene polymerization catalysts were first developed in the 1990s at Phillips Petroleum Company. In the United States alone, these catalysts currently produce nearly 14 billion pounds of polyethylene that is, in turn, used to fabricate trash bags, grocery sacks, milk and detergent bottles and piping for water and gas service. Despite their long history and commercial importance, the structure of chromium catalysts and their polymerization mechanisms are still poorly understood at the molecular level. Attempts to model commercial catalysts have led various research groups to develop discrete organometallic chromium complexes as polymerization catalysts. Most of the complexes have employed cyclopentadienyl and other negatively charged (anionic) ligands. We have sought to extend the family of useful polymerization catalysts by synthesizing a series of chromium (II) and chromium (III) complexes supported by neutral tridentate bis(2-pyridylmethyl)amine and tetradeinate tris(2-pyridylmethyl)amine ligands. These complexes have been characterized by x-ray crystallography, elemental analysis and various magnetic and spectroscopic techniques. These results will be presented along with initial polymerization data showing the impacts of ligand structure and metal oxidation state on catalyst activity and polymer properties.

**SYNTHESIS AND ETHYLENE POLYMERIZATION REACTIVITY OF CHROMIUM(II) AND CHROMIUM (III) COMPLEXES INCORPORATING PYRIDINEBISIMINE, BIS(2-PYRIDYLMETHYL)AMINE AND TRIS(2-PYRIDYLMETHYL)AMINE ANCILLARY LIGANDS.** Nicholas Robertson, undergraduate student, with Michael Carney, faculty, same department. *American Chemical Society National Meeting, Spring 2003 New Orleans, LA, 22-26 March 2003.*

Chromium catalysts are used commercially to produce billions of pounds per year of high-density polyethylene and selected grades of linear-low density polyethylene. Attempts to model and improve upon these commercial catalysts have led many research groups to synthesize discrete organochromium complexes. To date, a wide variety of chromium compounds have been prepared, with most employing cyclopentadienyl or other anionic ancillary ligands. Many of these complexes have proven to be effective ethylene polymerization and oligomerization catalysts. We have sought to expand the family of chromium catalysts to include those supported by neutral tridentate pyridinebisimine (PBI), bis(2-pyridylmethyl)amine (BPA) and tetradeinate tris(2-pyridylmethyl)amine (TPA) ligands. Synthetic schemes have been developed for neutral and cationic chromium(II) and (III) complexes, including examples of (PBI)CrCl$_3$, (PBI)CrCl$_2$ and (BPA)CrCl$_2$ derivatives, (TPA)CrCl$_2$, [(TPA)CrCl$_2$][BPh$_4$], and the cationic organometallic derivatives, [(TPA)CrMe$_2$][BPh$_4$] and [(TPA)CrPh$_2$][BPh$_4$]. Selected x-ray crystallographic and magnetic susceptibility data, as well as polymerization testing results will also be presented.

**EQUILIBRATION IN ALKOXYSULFONIUM INTERMEDIATES IN THE SWERN OXIDATION: STUDIES OF THE SELECTIVITY OF OXIDATION OF PRIMARY AND SECONDARY ALCOHOLS.** Donald Rogness, undergraduate student, with Cheryl Muller, faculty, same department. *225th National Meeting of the American Chemical Society, New Orleans, LA, 22-26 March 2003.*

The Swern reaction of alcohols can be carried out using many substituted sulfoxides, in addition to the traditional reagent based on DMSO. Our attempts to use sterically hindered sulfoxides led to some enhancement of the oxidation of primary alcohols over sec-
ondary alcohols, leading to modest selectivity for production of aldehydes over ketones in competition experiments. The incomplete selectivity led us to investigate the formation of the alkoxy sulfonium salt intermediates. We determined that methoxy- and primary alkoxy sulfonium salts could be reacted with isopropanol, which equilibrated with the smaller group. Reactions using an enantiomerically pure sulfoxide and (S)-2-butanol showed diastereomeric alkoxy sulfonium salts, indicating that reversible substitution reactions had occurred on the sulfur during the formation of the alkoxy sulfonium salt. Currently we are looking at the oxidation of diols containing both primary and secondary hydroxyl groups, and investigating the effect of intramolecular hydrogen bonds on the oxidation of the diol.

**A FLOURESCENT SENSOR NOT SUBJECT TO QUENCHING BY PARAMAGNETIC METAL IONS.** Joseph Schaefer, undergraduate student, with David Lewis, faculty, same department.


6-(2-Amino-ethylamino)-2-butyl-benzo[de]isoquinoline-1,3-dione was prepared and its fluorescence emission spectrum in isopropyl alcohol was measured in the presence of four rare earths from the lanthanide series: dysprosium, holmium, terbium, and lanthanum. It was found that the fluorescence emission intensity increased, rather than decreased, on complexation of the metal ions. No evidence for paramagnetic quenching of fluorescence was observed on complexation of the paramagnetic metal cations, and the number of unpaired electrons on the metal did not affect the intensity of the emission spectra. This compound was able to detect the metal in concentrations as low as 4µM (0.6 ppm).

**STRUCTURE OF GAN SURFACES - PERSISTENCE OF SURFACE CLUSTERS.** Timothy Schleusner, undergraduate student, with Marc Mc Ellistrem, faculty, same department.

*Great Lakes Regional Meeting of the American Chemical Society, Minneapolis, MN, 2-4 June 2002.*

**SYNTHESIS OF SUBSTITUTED METHYLIDENE IMIDAZOLONES AS SIMPLE ANALOGUES OF THE COFACTOR OF PHENYL AMMONIA LYASE.** Benjamin Schmiege, undergraduate student, with Elisabetta Fasella, faculty, same department.


The enzyme phenylalanine ammonia lyase incorporates an unusual structural modification: a 4-methylideneimidazol-5-one ring derived from cyclization and dehydration of three amino acids in the protein backbone. The methylidene imidazolone is believed to act as an electrophilic catalyst for the deamination of phenylalanine in a transformation unprecedented with synthetic reagents. The alternative degradation pathway of phenylalanine mediated by a mimic of phenyl ammonia lyase could potentially be useful for the treatment of patients who suffer from the genetic disease, phenylketonuria. A synthetic route to a small organic molecule incorporating the methylidene imidazolone functionality has been designed with the goal of testing the intrinsic reactivity of the methylidene imidazolone as a deaminating agent for aromatic amino acids. Initial efforts to obtain the target compound were hampered by difficulty in removing one of the protecting groups. Alternative protecting strategies are currently being tested. A synthetic route to a hexadepsipeptide designed
to undergo intramolecular cyclization leading to formation of the methylidene imidazolone functionality is also pursued. This work should lead to a better understanding of the relationship between amino acid sequence and peptide structure. The enantiomeric resolution of tropic acid, which is to be used as one of the building blocks of the hexadepsipeptide, has been accomplished.


The antifungal agent Amphotericin B (AmB) is one of a handful of agents shown to slow the course of animal prion disease. We propose it is possible that AmB may act to physically prevent conversion of the largely á-helical prion protein (PrP) to the pathological á-sheet aggregate protease resistant isoform (PrPαres) in prion disease. Congo Red and other small molecules have been reported to directly inhibit amyloidogenesis in both prion and Alzheimer peptide model systems by specific binding. This binding is thought to either directly block fibril propagation or “overstabilize” the pathogenic isoform so that it is not flexible enough to induce other proteins to misfold. To assess whether AmB is capable of preventing amyloidogenesis, as does Congo Red, we have used the insulin fibril and A â 25-35 amyloid model fibril systems. We find that AmB does bind strongly to both insulin (Kd= 1.1 µM) and Aâ 25-35 amyloid (Kd= 6.4 µM) fibrils, but not to native insulin. Binding is characterized by a red-shifted AmB spectrum indicative of a more hydrophobic environment. In kinetic fibril formation studies, AmB was able to significantly kinetically delay the formation of Aâ 25-35 fibrils at pH 7.4 but not insulin fibrils at pH 2. We have further investigated the effect of AmB on putative channel formation by Aâ 25-35.


Complexes formed from nitrile donors and boron trifluoride have drawn much attention from structural chemists since their structure and bonding obscures the distinction between bonded and non-bonded interactions. Furthermore, their structures are quite sensitive to chemical medium, a phenomenon that is most clearly illustrated by dramatic differences between the gas- and crystal-phase structures. For CH3CN-BF3, the B-N bond contracts from 2.0 to 1.6Å upon crystallization, and the N-B-F angle opens by 10°. In a previous matrix-IR investigation of CH3CN-BF3, the C-N stretching frequency (ν2) was observed very near the value for the crystalline complex, suggesting that the structure and bonding of the matrix-isolated species was quite similar to that of the crystal. Results will be presented that correct and extend the initial study. A new assignment for the C-N frequency (ν2) will be reported, which has been verified by 15N substitution, as will the frequencies of the BF- asymmetric stretching (νI3) and umbrella (ν7) modes. These data indicate that matrix-isolated CH3CN-BF3 is, in fact, much more weakly bonded than its crystalline counterpart, though it is still unclear how it compares to the gas phase complex. At this point, the analogous vibrational bands have also been measured for (CH3)3CCN-BF3 and C6H5CN-BF3 as well. Current efforts are centered on obtaining data that will link these
frequencies to structural properties, and recent results from ab initio calculations, x-ray crystallography, and solid-state IR spectroscopy will also be presented.

COMMUNICATION DISORDERS


The purpose of this study was to: 1) determine differences in voice characteristics of male and female Hmong students, 2) determine whether these characteristics differ in English and Hmong and, 3) determine if a difference exists between voices of Hmong and Caucasian children. Voice samples of Hmong and Caucasian children, ranging in age from 5 to 11 years, were analyzed acoustically for voice quality (sustained /a/) and frequency characteristics (picture description). The Hmong children generated picture descriptions in both English and Hmong. The groups did not differ significantly on any of the voice quality or frequency measures. The frequency variability measure (pitch sigma) was greater for the samples in Hmong than in English. Another benefit of this study was to add to the limited collection of acoustic data available on the voices of children.

COMMUNICATION & JOURNALISM


Television and music videos are two of the top six media predominantly used by teenage girls, according to USA Today (Signorelli, 1997). The messages of MTV present females as sexed objects for consumption; and increasingly, these messages are directed to younger and younger viewers. For example, the most recent winner on “Total Request Live” (TRL) show on MTV—a show designed primarily for preteen/teenage girls to vote for their favorite music video—was Christina Aquilera’s video, “Dirrty,” in which she dances almost nude, moving suggestively, and manipulating phallic objects. In Britney Spears’ video, “...Baby, One More Time,” she is dressed in a school girl’s school uniform, with backup dancers also in school uniforms, dancing provocatively a in middle school setting. According to Symbolic Interactionists, these and other MTV videos work at the symbolic level to induce us to take the role of the other, in this case imagining the sexual activities of preteen/teenagers. In “Are Teens TV Smart?” Talbot (1990, p. 36) states that the “potential for being dominated by imagery is frightening.” Just how frightening these messages are is the point of this study, which analyzes the stereotyped and sexualized representations of females on videos shown on TRL for preteens/teenagers. Spliced into this analysis will be critical incidents observed by the author of grade school girls (re)enacting MTV-constructed identities.

Expectancy Violations Theory (Burgoon & Hale, 1988) has been used to describe communication within space expectations based on the four proxemic zones of intimate space, personal distance, social distance, and public distance. Space violations can result in either a positive or negative valence, depending upon the reward valence of the communicator, the context, and relational characteristics of the interactions. Although studies on classroom seating arrangements have been correlated with factors such as grades, attendance, participation, and group cohesion (Weinstein, 1979), nothing has been done with classroom proxemics to validate Expectancy Violations Theory (EVT). This study applies EVT to college students’ attitudes toward “traditional seating” in the classroom in comparison to “non-traditional” seating. Through the use of participant observation and selected interviews, the author compares three common seating arrangements—lecture style using computer technology, small groups at tables, and desks positioned in a large circle—to investigate perceived expectancy violations. As EVT predicts, those violations result in a positive or negative valence that varies from student to student based on their perceptions of the professor, the subject matter, and the classroom relational environment.


Leon Festinger’s (1996) Cognitive Dissonance Theory offers the premise that the more important an issue is to a person, the greater the amount of dissonance s/he will feel, and the more mental work - will be needed to escape that dissonance. Because one of the most critical decisions individuals are faced with is the selection of a life partner, any cognitive dissonance surrounding that decision is likely to produce a large degree of negative affect. To illustrate the results of negative affect produced by cognitive dissonance, this paper juxtaposes the 1999 romantic comedy, “Runaway Bride,” with selected interviews with three married women who also experienced pre-wedding second thoughts. This intertextual analysis uses interview quotes and cinematic episodes to demonstrate Festinger’s three hypotheses: Selective exposure prevents dissonance, postdecision dissonance creates a need for reassurance, and minimal justification for action induces a shift in attitude. In both the story of “Maggie” (played by Julia Roberts, who runs from alter after alter) and in the narratives recounted by now happily married women, factors such as self-affirmation, personal responsibility, and induced compliance influence what Elliot and Devine (1994) call the “dissonance thermometer.”

RUNAWAY BRIDE: AN APPLICATION TO COGNITIVE DISSONANCE. Dana Finne, undergraduate student, with Susan Hafen, faculty, same department. 4th Annual UW-System Symposium for Undergraduate Research and Creative Activity—Oral Presentation. Eau Claire, WI. 29 April 2003. O-021.
This paper uses the 1999 romantic comedy “Runaway Bride” to illustrate Leon Festinger’s Cognitive Dissonance theory. Festinger’s theory is applicable to any situation in which one finds him/herself behaving in such a way that does not agree with what he/she knows (e.g., smoking or drinking). This paper will demonstrate how “Maggie,” played by Julia Roberts in “Runaway Bride,” runs from altar after alter Festinger’s three hypotheses about reducing dissonance, (selective exposure prevents dissonance, postdecision dissonance creates a need for reassurance and minimal justification for action induces a shift in attitude), become apparent. Cognitive dissonance offers the belief that the more important an issue is to a person the greater amount of dissonance he/she will feel. The theory also states that one will do anything to escape dissonance. This paper will also emphasize how the importance of “Maggie’s” life decision about marriage and her decision to finally remain at one altar correspond with these ideas.


Mom and Pop restaurants are slowly being replaced by cookie cutter businesses claims the U.S. News and World Report (1994): “New casual-dining chains are eating the lunch of independent restaurants” (p. 22). Applebee’s Neighborhood Bar and Grille is one of the chains experiencing rapid growth and popularity both nationally and internationally and “eating the lunch” of the local restaurant, Heckel’s. This ethnographic study of Applebee’s organizational culture looks at the restaurant both from the employee and customer perspective to analyze its local success in Eau Claire, Wisconsin. The analysis will be based on surveys of selected customers, interviews with past and current employees, and participant observation, since one member of the research team conducting the study was an Applebee’s employee and the other three researchers were customers. This study approaches organizational culture from the standpoint of challenging “traditional assumptions, raises questions, and questions the taken-for-granted” (Pepper, 1995, p. 29). In questioning the taken-for-granted success of Applebee’s, it was learned that success is in the eye of the beholder.


Every year, executives from the United States are sent overseas to conduct business in Germany. Yet far too often these executives or expatriates return home early. One reason why so many expatriates are unsuccessful overseas is the lack of sufficient cross-cultural training before departure. Consequently, the purpose of this research is to further understand the need for effective cross-cultural training and to evaluate existing cross-cultural training programs for Germany. The information gathered also will be useful in improving current cross-cultural training programs. In order to gather the data, a web-based survey questionnaire will be administered to over 800 organizations from the mid-west that con-
duct business with Germany. The survey includes 11 questions exploring why the company sends executives to Germany and if the company prepares the executives with a cross-cultural training program before departure. If a pre-departure training program is offered, the survey also examines who conducts the training, the components included within the training, and the effectiveness of the training. Finally, the survey gathers information regarding German business practices and overall cultural differences considered most important by the organizations.

PRETTY WOMAN AND THE CINDERELLA MYTH: STANDPOINTS OF COLLEGE WOMEN. Kelly Koster, undergraduate student, with Susan Hafen, faculty, same department. 

Standpoint Theory (Harding & Wood, 2003) allows researchers to understand particular issues and phenomenon through the lenses of people whose experiences are grounded in the communicative situation. This paper asks questions about how undergraduate college women situate themselves to and in the popular, fairly tale of a film, *Pretty Woman*, starring Julia Roberts and Richard Gere. From a feminist perspective, this film illustrates what Dowling (1981) calls the “Cinderella Complex,” describing it as “women’s hidden fear of independence.” In the film, Julia Roberts’ character is romantically rescued from her life of prostitution by a powerful wealthy man played by Richard Gere, turning her into an upper class lady in the end. Using a feminist critique of this piece, it can be argued that the relationship between Julia Roberts and Richard Gere reinforces the negative stereotype that women need to be rescued and cannot succeed in life without economic and physical support from men. Whether or not young women viewers are able to recognize the Cinderella complex—not by name but by concept—is the primary focus of this study. To answer this question, a focus group was conducted with eight college women, as well as interviews with two additional women. The result is an increased understanding of the complexity of the desire for chivalry combined with a feminist need for independence.

A CLUSTER ANALYSIS OF THE ‘GODS SPEAK’ BILLBOARD CAMPAIGN. David Kraai, undergraduate student, with Susan Hafen, faculty, same department. 

In 1998 a series of billboards were posted with a simple, but provocative message: ‘God still speaks.’ Little research has been done on this topic despite the pervasiveness of this campaign both in the United States and internationally. A critical analysis of this campaign is needed to determine the intentions of the rhetor and any disparities between the intended purposes of the campaign and the actual/perceived messages given thru the artifact. In this paper a cluster analysis is employed to analyze the advertising campaign because it provides “a survey of the hills and valleys of the [rhetor’s] mind” (Burke, 1937). The analysis demonstrates that the GodSpeaks campaign, while intending to humorously bring God into the public discourse, covertly uses recurring threats to evoke an emotional response from the target audience.
HMONG WOMEN LEADERS: IDENTITIES, ROLES, AND STIGMAS. Maiknue Moua, undergraduate student, with Susan Hafen, faculty, same department. 
Western States Communication Association Convention, Long Beach, CA, 2-5 March 2002.

Within the Hmong community, some say, the terms “women” and “leadership” are incompatible. This study explores how Hmong women leaders view their identities and roles as a balancing act, one that requires them to negotiate a public role of liaison and mentor to Hmong community while privately enduring the stigma of abandoning Hmong tradition. Unlike Hmong men, whose adoption of American ways is commended, Hmong women are held accountable by their communities to preserve “tradition” that is, gender dicta for performance within the family as wives and mothers. The study, involving in-depth taped interviews with five Hmong women leaders, explores recurring themes through the vehicle of Identity Theory.

MASCULINITY AND MALE DANCERS: A SYMBOLIC INTERACTIONIST ACCOUNT. Joseph Rand, undergraduate student, with Susan Hafen, faculty, same department.

George Herbert Mead’s theory of the self-concept, given the title “symbolic interaction” by Herbert Blumer, describes the self as a “looking glass” that reflects how we imagine we look to others. In the case of gender, a male’s perceived level of masculinity is largely made up of how others perceive him. Because dance has been socially constructed as a feminine activity in the United States, this study investigates how male dancers’ perceived masculine identities are influenced by others. These identities are shaped in public schools where male students are directed towards sports and female students towards dance (Crawford, 1994). Gottman (1967) would explain the subsequent avoidance of males to participate in dance as an avoidance to situations where they are “out of face” because “others would refuse to recognize and respect the self [they] present” (p. 8). This potential loss of face must be mitigated by coping strategies necessary to validate a self-concept despite some social stigmatization. This paper examines those coping and validation strategies needed to maintain masculine identities. To do this analysis, the author uses both autoethnography, participant observation, and interviews with other male dancers to account for the ways in which the “generalized other” of male dancer stereotypes has been reconstituted to validate the self identities of men who express themselves through the art of dance.

A MID-TERM ASSESSMENT OF SACRED HEART HOSPITAL’S COMMUNITY HEALTH CAMPAIGN, HEALTHCARE 2004. Lauren Stockton, undergraduate student, with Terrence Chmielewski, faculty, same department. 

Sacred Heart Hospital initiated a television campaign in December of 2000 to support a community health care campaign. That campaign, Healthcare 2004, is a 4-year program to improve the health care in the Chippewa Valley, and to build the positive image of the
hospital so that residents benefit from improved care offered there. Students in two research classes at UW-Eau Claire conducted an image survey of Sacred Heart’s primary and secondary service areas in March of 2001 (Time 1). Results of that survey aided the reformulation of the campaign to reflect Sacred Heart’s perceived strengths and desired image. A similar survey was conducted in a third research class at the mid-way point of the campaign, in March of 2002 (Time 2). This research project examines the Time 1-to-Time 2 comparisons in Sacred Heart’s image as a means for assessing the effectiveness of the campaign, and to provide information for a further reformulation of the campaign. Results show that the campaign has been successful in modifying Chippewa Valley residents’ impressions of Sacred Heart Hospital, showing that impressions have gotten more positive. Recommendations are made for modifying the campaign to ensure the effectiveness of the campaign over the next two years.

WHEN COMMUNICATION FAILS: FACE NEGOTIATION THEORY AND THE END OF THE PACIFIC WAR. Kevin Tambornino, undergraduate student, with Susan Hafen, faculty, same department.


Face Negotiation theory (Ting-Toomey, 1994) explains differences in intercultural communication between the East and the West in terms of the concept of “facework,” which she defines as involving “the enactment of face strategies, verbal and nonverbal moves, self presentation acts and impression management interaction” (p. 1). Using this theory as well as the concepts of high-context and low-context cultures, this study looks at the cross-cultural communication between Japan and the United States in 1945 that led to the atomic bombings of Hiroshima and Nagasaki. The paper’s central argument is that these bombings could have been avoided if negotiations from the onset had been carried out with respect for cultural traditions, specifically the concept of “face.” The paper provides historical examples of how Japan attempted to surrender in a way that maintained their honor or “face,” but a mutual failure to communicate resulted in the devastating loss of hundreds of thousands of lives. The importance of studying this event in terms of intercultural communication competence is highly relevant today in the escalating conflict between the United States and Korea. This paper ends with suggestions for negotiating between East and West based on an understanding of “face.”

THE LINK BETWEEN INTERPERSONAL DECEPTION AND EXPECTANCY VIOLATIONS: REALITY TV AND FILM AS EXEMPLARS. Christina Thrun, undergraduate student, with Susan Hafen, faculty, same department.


Theories of expectancy violations and interpersonal deception often go hand in hand, since one does not typically expect to be deceived. However, little extant research that applies these theories to mediated examples and asks questions about the relationship of deception and expectancy violations. How and when do violations of expectations arouse questions of deception? How and when do deceivers try to conform to expected norms in
order to remain undetected? This study uses widely viewed examples from film and television, fiction and “reality” as viewed on television. These exemplars are analyzed using the propositions from interpersonal deception theory (Buller & Burgoon, 1994) and expectancy violations theory (Burgoon, 1975) to illustrate the interrelationships between these two theories and to develop some tentative hypotheses about real-life situations. Television and movies may not represent “real life,” but they do reflect mediated, mainstream constructions of how we believe life is or should be.

ANANOVA: THE VIRTUAL NEWSCASTER: A NEOARISTOTELIAN ANALYSIS. Aaron Unseth, undergraduate student, with Susan Hafen, faculty, same department.

In 2000, Ananova became the first ever virtual newscaster to read news reports on the world wide web. “She” has been carefully created to produce the most desirable vocal traits, gestures, and physical attributes as the first perfect orator. As reported in Broadcaster, 2000, she will soon appear on Palm Pilots as a personal assistant, make announcements in airport terminals across the world, and someday deliver a presentation with Microsoft’s Bill Gates. Because Ananova promises to revolutionize public communication around the world and because Neo-Aristotelian criticism—the foundational analysis of logos, ethos, and pathos communicated by public speakers—has never been used to understand the implications of this new technology, this paper will apply Aristotle’s key principles to the virtual “newswoman.” In traditional public communication, ethos is represented by the speaker’s credibility (the appeal of his/her character) and pathos (his/her emotional appeals). How are the consumers of Ananova news reports able to (re)construct an ethos or pathos from a virtual speaker? This paper will answer these questions and show how electronically generated rhetors will revolutionize and redefine the concepts of ethos and pathos.

THE PRINCESS DIANA FAIRY TALE: A DRAMATISTIC ANALYSIS OF ITS ENDING. Jooe Waterhouse, undergraduate student, with Susan Hafen, faculty, same department.

Princess Diana was an “interertextual icon, continually written into place by multiple effects of representation” (Cox, 1999, p. 4), and her death was the result not merely of “a speeding car but a speeding culture” (Alter, 1997, p. 1). The representation of her death by international media highlighted Burkean notions of guilt, victimage, purification, and redemption. Kenneth Burke (1945; 1950) believed that most rhetorical situations involve some type of guilt and call for either self-mortification or victimage, which can be deconstructed through a pentadic analysis of the agent, agency, act, scene, and purpose. Such an analysis offers a “static photograph of a single scene in the human drama” (Griffin, 2000, p. 288). This paper examines the death of Princess Diana by applying a pentadic analysis of the role of the paparazzi through newspaper artifacts to discover the underlying motives of the media in (re)presenting the ending of a fairy tale. Through establishing ratios such as agent-agency and act-scene, the study is able to show how the media is both victim and villain of the final drama in the Princess Diana fairy tale.

Jesse Delia’s constructivism asks how people make sense of the world through a system of personal constructs. Constructivism also tries to find out why people make certain communication choices. This theory relies on Walter Crockett’s open-ended Role Category Questionnaire to understand why people communicate the way they do. The Role Category Questionnaire is used to determine the individual’s cognitive complexity level when they communicate. This paper will find the differences between undergraduate communication majors and math majors, if any. The individuals will be analyzed using the Role Category Questionnaire. The purpose of this paper is to find out if communication majors are by nature more cognitively complex due to their field of study as compared to math majors. Also to understand if it is possible to increase cognitive complexity levels in math students by being required to enroll in communication courses.

COMPUTER SCIENCE


The widely deployed Simple Mail Transfer Protocol (SMTP) inherently reveals important private information that renders it an impractical medium for secure communication. By examining archives on mail servers or capturing SMTP packets in transit, network intruders (unintended recipients) can exploit compromised information that includes the identity of the sender and recipient, the date the message was sent, the length of the message and perhaps even the contents of the message. Solutions exist which obscure a portion of this information, but it is impossible to obscure all information in SMTP. In this paper, a variation of SMTP is proposed which will obscure all the above-mentioned information as well as providing a sender with additional transfer controls. This comprehensive solution will enable private messages to be transmitted in confidence across public networks. The most obvious difference between current protocols and the proposed protocol is that the recipient is not explicitly referenced in a message, but instead the message is encrypted and addressed to a public “bulletin board” which is periodically checked for the recipient’s incoming messages.

Steganography is the art of hiding secret information within blatantly unconcealed information. Currently steganography is being used to send hidden text messages and photos under the guise of audio files, pictures, and even movie scripts. More specifically there are several free or shareware programs designed to hide data in JPEG images. The JPEG image format makes use of discrete cosine transform (OCT) functions to convert image data into rates of change frequencies, it is then possible to reduce the size of an image file by removing parts of the image that will not be noticed by the human eye, this allows a good compression of images without effecting the overall quality. Steganographers have recognized the popularity of JPEG images on the Internet, and have developed techniques to hide data within the OCT’s themselves. However, steganography is not a perfect art form; using statistical analysis software, or even the human eye, it is sometimes possible to detect the presence of these hidden messages. The objectives of this project are to improve steganographic techniques to reduce the ability of statistical analysis software to determine the presence of a hidden message, specifically within JPEG images.

A LOGICAL TOPOLOGY FOR REAL-TIME BLUETOOTH SCATTERNETS.

Eric Sorenson, undergraduate student, with Jack Tan, faculty, same department.


The Bluetooth communication standard has become a popular choice for wireless ad-hoc networks. A majority of Bluetooth networks contain eight or less nodes, called piconets. As the number of nodes increase, piconets merge to form scatternets. The Bluetooth specification has yet to specify details regarding the process of creating scatternets from piconets. Traditional methods of network management do not apply, as buffer sizes are often very small in Bluetooth devices such as PDAs and cellular phones. Previous solutions have offered ‘self routing’ behavior which offers an expandable, inexpensive solution. However, these methods do not address applications relying on critical real-time data transfer. A hybrid token-based solution on self-routing is developed by embedding B-trees into the scatternet, which regulates real-time traffic while preserving self-routing properties.

DEVELOPING AN OPEN SOURCE DATABASE BENCHMARK SYSTEM.

Justin Sabelko, undergraduate student, with Paul Wagner, faculty, same department.


Before choosing a database management system (DBMS) product to use for a software development project, software developers desire to compare available DBMS products by determining how well the DBMSs perform a variety of database work tests, called benchmarks. However, evaluating the performance of a DBMS is a difficult task to undertake. There aren’t many benchmark tools available for this process, and those that are generally available have significant cost. This option often isn’t practical, especially if the database that is going to be developed isn’t extensive. However, another option is developing from the open source software development community. The Open Source Database Benchmark project has started to develop freely available open source benchmarks for several DBMSs, but hasn’t developed anything as of yet for the Oracle DBMS, one of the most commonly used commercial DBMS products in both industry and academia. The major objectives of
our research are twofold. First, we are researching what structure is needed and what issues arise in developing an open source database system benchmark for a commercial DBMS such as Oracle. Second, we are developing a prototype benchmarking tool for the Oracle DBMS that conforms to the specifications of the Open Source Database Benchmark project.

COUNSELING SERVICES

INCIDENCE RATE AND CORRELATES OF EATING DISORDERS ON CAMPUS. Kimberly Masters, Sarah Lonsdale, Molly Hanson, and Melissa Marsh, undergraduate students, with P. J. Kennedy, faculty, same department, and Allen Keniston, faculty, Psychology.

The incidence rate and correlates of eating disorders on a university campus were investigated. All female undergraduate students (n = 6,300) were asked to complete a web survey containing the Eating Attitudes Test (EAT-26). Data were automatically and anonymously coded in a database. This study assessed the prevalence of abnormal eating behaviors and attitudes, provided a baseline to evaluate future prevention programs, and assessed the reliability of the EAT-26 for the student population. In addition, correlations between EAT-26 score, body mass index, and demographic variables allowed researchers to identify high-risk populations in order to develop secondary, rather than primary, prevention programs (secondary have proved more effective). Our findings will be used to inform students and their families, faculty, staff, and the surrounding community to the problem of eating disorders. Findings will supplement the few previous studies done with female college students and precede similar studies on other campuses.

ECONOMICS

PREDICTING OPENING WEEKEND BOX OFFICE REVENUES. Rebecca Hutchinson, undergraduate student, with Fredric Kolb, faculty, same department.
Midwest Economics Association Annual Meeting, Chicago, IL, 14-16 March 2002.

When a studio releases a film, it is taking the risk that a film will or will not be well received by a mass audience. If box office revenues could be predicted, film distributors would be able to budget appropriately and produce those movies that would bring in the largest amounts of money. One period of particular interest when forecasting revenue is the opening weekend of a film. When substantial revenue is generated during this time, a film presents a strong indication of financial success throughout its stay at the box office. A model using characteristics of a film as independent variables may determine the amount taken in during the opening weekend of a film. We hypothesize that those films that either are sequels, or released on holiday weekends, or contain popular cast members will likely have higher opening-weekend box office receipts. Using data from 1998-2001, we estimate a model of per screen revenue. We find that sequels are significant to the model as well as budget. However, movies with a top actor or debuting holiday weekend were not significant to the model.

TECHNOLOGY, LEARNING, STRATEGIC TRANSACTIONS, AND INSTITUTIONAL CHANGE. Juna Miluka, undergraduate student, with Tom Kemp, faculty,
same department.

*Western Social Science Association Conference, Las Vegas, NV, 10 April 2003.*

This work attempts to bring Commons’s theory of routine and strategic transactions up to date. In this the theory attempted to explain how individuals take actions to correct perceived problems in their day-to-day actions. It is suggested here that Commons’s work anticipated the evolutionary and learning theories becoming more common in the economics literature. Toward this end, a survey is made of current theories of cognition and learning in the psychology and philosophy literature. It is suggested that this body of literature offers great potential to advance theories of institutional change and development.

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**EVIDENCE-BASED MEDICINE: TOWARD A NEW DEFINITION OF ‘RATIONAL’ MEDICINE.** *Amanda Fullan*, undergraduate student, with *Ruth Cronje*, faculty, same department.


Evidence-based medicine (EBM) promises to make the practice of medicine more fully ‘rational’, thereby increasing medicine’s reliability and improving patient health outcomes. However, intractable ethical and epistemic problems with applying a model of rationality that privileges quantifiable ‘evidence’ in medical practice - evidence often at odds with nonquantifiable patient experiences, values and preferences - have prompted some within the medical community to condemn EBM. This article analyzes textual evidence from the medical literature as the medical community’s effort to rhetorically renegotiate a new model of rationality, one which both preserves rationality’s promise to protect medical decision making from the dogmatic, subjective and arbitrary and permits nonquantifiable patient experiences, values and preferences to play a legitimate role in rational diagnostic and therapeutic decision making.

**SCIENTIFIC AUTHORITY AND EVIDENCE-BASED MEDICINE.** *Amanda Fullan*, undergraduate student, with *Ruth Cronje*, faculty, same department.


The authority of science has had an impact on many arenas of action, including the practice of medicine. Throughout the West, doctors are under increasing pressure to base their clinical practice on the authority of scientific knowledge. For its part, scientific authority is established through rhetorical mediation of the discursive processes by which scientists make sense of empirical evidence. In this study, informed by the communication theories of Jürgen Habermas, we investigate the impact of scientific notions of “evidence” on medicine, particularly as they are exemplified in the evidence-based medicine movement, and analyze the tensions inherent in the application of these notions of evidence to the context of practical clinical action.

**GENETIC ENGINEERING IN SF FILM: THE SCIENCE OF GENETIC PERFECTION.** *Marnie Henderson*, undergraduate student, with *Gloria Hochstein*, faculty, same department.

The interdisciplinary nature of science fiction creates a need for greater public understanding of the real sciences behind the fiction. Genetic engineering has made its way into public conversation with the onset of the Human Genome Project and the ongoing controversies about cloning human, animal, and plant life. But, as the scientists know, there is much more to genetic engineering than cloning. Many science fiction works discuss genetic engineering as a social issue rather than a scientific issue. The science in some of these films is relatively accurate, but the filmmakers reach beyond our current knowledge of genetic engineering. I will look at the subject of genetic engineering in science fiction film from a scientific viewpoint. I will explore the basics of genetics and DNA and then relate the science to the fiction. With examples from various films, I will investigate the portrayal of genetic engineering in a science fictional, scientific, and social context.


The purpose of our study is to demonstrate how the definition of tragedy has changed from the time of Aristotle’s Poetics to the present day. In The Poetics (4th C. B.C.), Aristotle outlines specific “rules” of tragedy that every playwright should follow. What one notices, however, is that very few tragedies after the classical Greek and Roman periods adhere to Aristotle’s strictures. In fact, one comes to find that theater is no longer the sole genre of tragedy. We show how, over time, writers not only wrote tragedies with a decreasing regard for Aristotle’s theories, but also how the audience came to identify tragedy with genres other than that of theater (novels, motion pictures). We explore the evolution of tragedy and its meaning by analyzing Shakespeare’s Hamlet, Cervantes’s Don Quixote, Hawthorne’s The Scarlet Letter, Hugo’s Preface to Cromwell, and Miller’s Death of a Salesman.


This presentation is part of a faculty/student research project on Sly and the Family Stone, an integrated group of popular musicians founded by Sylvester Stewart, reaching their peak of national popularity during the 60s and 70s. The goals of the project have been to compile findings on three related topics: 1) the musical career of Sly and the Family Stone; 2) radical cultural activism and black/white relations during the late 1960s and early 1970s, especially in the San Francisco Bay Area; 3) the ties between the life of Sylvester Stewart and representations of black masculinity, popular music, and celebrity in recent American culture. We will use slides, video and background information to explore these themes. The presentation combines information from literary studies, cultural studies, and
music history. The researchers are interested in how urban street life has influenced representations of black masculinity in popular culture. With this focus, we will show how mass mediated texts and images influence collective behavior and action. Studying popular music figures such as Sylvester Stewart is especially useful for showing how imaginary and real dimensions of urban street life enter into the public perceptions of African American males as a larger group.

**FAMILY HEALTH NURSING**


**COUPLE INTERACTION IN BREAST CANCER.** Kathryn Forkrud, Jennifer Greiber, and Dianna Moll, undergraduate students, with Kathryn Anderson, faculty, same department. *7th National Conference on Cancer Nursing Research, San Diego, CA 5-9 Feb. 2003.*

Breast cancer is one of the most common malignancies among women in the United States. In the USA in 2002, 205,000 new BrCA cases were expected to be diagnosed (American Cancer Society, 2002) with approximately 40,000 women expected to die from BrCA. Couple relationship tension and the ongoing psychosocial morbidity of the spouse/partner during BrCA are found in both cross sectional and longitudinal studies (Lewis & Deal, 1995; Hilton, Crawford & Tarko, 2000; Weihs, Enright, Howe & Simmens, 1999). Northouse (2001) calls for further research to explore the reasons for couple responses to breast cancer. Twenty couples experiencing breast cancer were interviewed after diagnosis and 10 months later about their experience with breast cancer. A secondary analysis of the first interview couple data examined couple interaction on average five months after BrCa diagnosis to determine couple interaction characteristics that might have an influence on marital distress and marital satisfaction. This poster reports the issues of concern to the couples and also describes couple interaction dynamics during the breast cancer experience. Couple breast cancer issues included diagnosis, treatment, treatment effects, fear of recurrence, fear of death, support, coping, the health system, and financial concerns. Couple interaction issues included spouse support, understanding the spouse’s view, communication, intimacy, couple coping, changing life, thinking of the future, and growing as a couple. Implications for research and practice based on the findings are presented.

An innovative model for getting new knowledge into practice is through new knowledge discussion groups. The group discussions offer an interesting and effective means for incorporating new research knowledge into practice. Through this paper, a description of the groups, the historical development of previous groups, and the strategy for conducting the groups will be shared. This new model often involves discussion/collaboration between practitioners and researchers. Practitioners (nursing or interdisciplinary groups) meet every other week through 4 different one-hour group sessions. Group members read one article before each session on a topic selected by the group. Often, during the course of the contracted sessions, the author/researcher of one of the articles is contacted to ask questions of the article, to provide feedback to the author regarding the research or to suggest possible future directions important for practice. Nine groups have been conducted prior to the groups reported in this symposium. Practitioners have reported satisfaction with the groups. Further evaluation of these groups was needed regarding learning outcomes and practice change. Thus, the group experience and evaluation of 5 groups will be shared in other papers in this symposium. All groups were tape-recorded for analysis and are currently being evaluated on participant satisfaction, learner knowledge and possible practice change through surveys or telephone interviews.

UNDERGRADUATE STUDENTS AS RESEARCH ASSISTANTS: WHY AND HOW? Jessica McDaniel, undergraduate student, with Susan Moch, faculty, same department.


Many researchers do not employ undergraduate research assistants to assist with research. Yet, many researchers are employed in institutions that do not have doctoral or masters students readily available as research assistants. Employing undergraduate nursing students can be a very effective means for increasing the time that busy faculty members engage in research. Thirteen years of experience with undergraduate research assistants has provided great insight into the process of working with undergraduate students in an effective manner. This presentation will describe why it is important to employ undergraduate students in research. In addition, successful strategies for working with undergraduate students in research will be identified. If not engaged in research, most students do not envision themselves as future researchers and/or professors. Because of the predicted professor shortage and the limited diversity within nursing faculties, mentoring through undergraduate research is essential. Also, through learning about research through participation, students can become very interested in evidence-based practice. Undergraduate research assistants can also be important spokespersons for generating enthusiasm for research in an undergraduate program. Some effective means for working with undergraduate students in research include having institutional support, employing teams of students, identifying specific tasks for each student and providing for a division of labor within each team. It is also important to help the student identify his or her own learning needs and to identify cost effective means for faculty involvement in providing some emotional and instrumental support for the student. Through this presentation, both the role of the faculty member in working with an undergraduate research assistant and the student perspective on involvement in research will be shared.

UNDERGRADUATE RESEARCH ASSISTANTS AS POTENTIAL FOR EVIDENCE-BASED PRACTICE. Jessica McDaniel, Trista Drew, Samantha
Gueldenzopf, May Yang, and Kimberly Davids, undergraduate students, with Susan D. Moch, faculty, same department.  

FOREIGN LANGUAGES

CREATING SPACE FOR WOMEN TO CREATE: A CLOSER LOOK AT MEXICAN WOMAN DRAMATIST, SABINA BERMÁN’S PLAYS, ‘EL GORDO LA PÁJARA Y EL NARCO’ AND ‘MUERTE SÚBITA’. Jennifer Allen, undergraduate student, with Eva Santos-Phillips, faculty, same department.  
Marquette University Women’s Studies 8th Annual Conference, Milwaukee, WI, 21-23 March 2002.

This project explores the literary works of contemporary, award winning, Mexican author Sabina Berman. It focuses on the explicit and implicit meanings of her theatrical works, especially those which have thus far been neglected in literary criticism. We propose that through a careful study of Berman’s work, we will make a contribution to the study of contemporary Latin American theater and women’s literature. In studying Berman’s work, we can better understand some of the Mexican women writer’s preoccupations and what she perceives to be the social situation in Mexico D.F., where the majority of her plays and novels take place. Given the US’ proximity to and close relationship with Mexico, we believe it is imperative that we learn as much as possible about our neighbor’s concerns and dreams and the way the Mexicans interact with each other. By studying closely Berman’s literary output, especially those works that we perceive to shed light on gender roles, we advance earlier criticism and encourage others to study this worthy writer.

STUDENT TEACHER DISCOURSE ACQUISITION VIA IN-CLASS LIST SERVES. Chris Asuquo, Katherine Beger, Joe Fricano, Elizabeth Peters, Dean Tsantir, and Oleg Yefimov, undergraduate students, with Kate Reynolds, faculty, same department.  
Teaching English to Speakers of Other Languages (TESOL) Conference, Salt Lake City, UT, 9-13 April 2002.

This study investigated the efficacy of a listserv for outside class discussion to create opportunities for future language teachers to apprentice in the discourse domain. Findings revealed that students were able to provide meaningful reflections, to ask probing questions, to create scaffolded discussions between the in- and pre-service instructors, and to share and analyze conflicting beliefs. This presentation will demonstrate findings through the students’ voices, and outline the listserv technique.

TIPS FOR MAINSTREAM TEACHERS TO ACTIVELY ENGAGE ENGLISH LANGUAGE LEARNERS IN THEIR CONTENT CLASSROOMS. Katharine Beger, undergraduate student, with Kate Reynolds, faculty, same department.  

The number of English Language Learners (ELLs) in mainstream classrooms continues to increase as does the need for ELL inclusive curriculum. Unfortunately, not all teachers are aware of the curricular, pedagogic, and linguistic adaptations necessary to create an
optimal learning environment. The presentation describes a handbook that can be used by both mainstream and English as a Second Language (ESL) teachers to actively engage ELLs in the classroom. Teachers can use this handbook on theory, pedagogy, and assessment as a reference guide to them in adapting lessons, or as a basis for creating lesson plans to include all students.

THE SCHLEGELMILCH FAMILY’S IMPACT AND CONNECTIONS TO SOCIAL, ETHNIC, AND COMMUNITY LIFE IN EAU CLAIRE. Emily Dieringer, undergraduate student, with Johannes Strohschank, faculty, same department.


Eau Claire has been the center of northwest Wisconsin for over 150 years attracting people, commerce, and industry of all kinds. Herman Schlegelmilch and his family arrived to Eau Claire from Germany in 1860. He built the first brick home there in 1871. The Schlegelmilch-McDaniel House remains as a reminder of the historic downtown. Research and documentation about this brick home holds keys not only to how the city grew over time, but also to the German family that lived there. Information about the Schlegelmilch family and other German immigrants compiled from newspaper articles, local history books, and special collections containing diaries, certificates, and keepsakes details the implementation of their German background into the churches and schools they attended, the public offices they held, and societies they were involved in. This information is presented in a research paper and will be used by the Chippewa Valley Museum to educate visitors on the importance and significance of the German influence in Wisconsin.

LANGUAGE POLICIES OF THE EUROPEAN UNION: WITH SPECIAL REFERENCE TO MINORITY LANGUAGES. Katie Gustad, undergraduate student, with Martina Lindseth, faculty, same department.


The European Union’s unique model of integration and unification of different nations should ensure respect for the cultural and linguistic diversity of Europe. The Union has established eleven official languages in an attempt to include all participating nations. However, in all Member States there are indigenous groups who speak a native language different from the respective official language/s. This is true for an estimated 40 million people in the EU. In 1992, The European Commission initiated a study of the Union’s policy in the area of minority and regional languages. The goal of Euromosaic was a methodologically sound study of all regional and minority language groups within the EU, focusing on a number of social and institutional concepts. In our research we assess the current status of Europe’s minority/regional languages based on the Euromosaic and Eurolang reports. We examine initiatives and programs such as the European Bureau for Lesser-Used Languages and the Mercator Network, as well as specific projects funded during the European Year of Languages 2001, in order to assess the progress made in sustaining the EU’s minority languages. We will specifically look at the present linguistic circumstances and political status of Catalan, a minority language spoken by over 6 million in Spain, Italy and France.

This session revisits last summer’s AATG Immersion Weekend at UW-Stevens Point. After an introduction to the intricacies and historical development of the European Union, the focus will turn to the problems of decision-making among the EU members and the acceptance of another country into the EU. There will be discussion on materials to introduce the EU and EURO to students and classroom activities developed by the workshop participants.

SOCIAL CONSTRUCTION OF KNOWLEDGE ABOUT THE TEACHING OF ENGLISH TO SPEAKERS OF OTHER LANGUAGES. Carissa Metcalf, undergraduate student, with Kate Reynolds, faculty, same department. International Society of Languages Studies Conference, St. Thomas, Virgin Islands, 29 April–3 May 2003.

We know that classroom interaction among students mediates knowledge development in significant ways. We also know that the use of electronic media for fostering class interaction in teacher preparation programs is increasing. However, we know little of the specific linguistic and other interactional means that are used by pre-service teachers in their conversations with each other to co-construct their understandings of the content of their methods courses. We also know virtually nothing of how such development is mediated by electronic interactions. The focus of this roundtable is on two studies that investigated the nature of the interaction on an electronic listserv created by students in a TESOL methods course as they discussed their reactions to readings about language teaching methodology. The two-part question guiding the studies was: What are the content-specific topics that students bring up in their discussions with each other and what are the linguistic and interactional strategies they use to jointly construct their knowledge of the topics? The primary sources of data were web-based asynchronous discussions on course readings that took place every week outside of class meetings on a class listerv. Students were asked to read the assigned readings and share their views of the content on the listerv with each other at least once a week. The postings were analyzed using discourse analytic methods. The purpose of the roundtable is to share our preliminary findings with the participants and discuss their potential for contributing to our understanding of how language use mediates development and of the role that such media can play in English language teacher preparation programs. We will conclude the session with a discussion on future possibilities for research and the implications for language teacher preparation programs.


One goal for language teacher trainers is to create opportunities for future language teachers to grapple with and understand the jargon and discourse within the profession. As in so many classrooms, simply receiving the knowledge does not allow the prospective teachers to internalize the jargon or to make the transition into thoughtful, competent, and recognizably learned speakers of the discourse. Extending researchers’ recommendations,
such as Rosaen and Schram (1998), and Johnson (1994), many educators are seeking to create a variety of techniques to allow the student teachers to internalize and own the discourse of their domain. This action research study investigated the efficacy of the use of a listserv for outside of class discussion among the student teachers. M.S. TESOL students were instructed to read chapters for each upcoming class, and before coming to class, share their reflections and questions with their peers on the class listserv. They were informed as to a lack of instructor intervention, but that eavesdropping would occur. It was believed that the listserv medium would extend class time, build student rapport, allow them to co-construct their knowledge of the theoretical and practical discourse, and finally to speak the “language” of the field (Harris, 1995). For two 16-week semesters in 1999-2000, 22 students read, thought and shared their perspectives on their methodology readings on their listserv. Qualitative data were collected (594 email submissions) and analyzed using open coding techniques. Initial findings revealed that once preliminary fears were dispelled about the use of the medium, that students were able to provide personal, meaningful reflections, to ask on-target, probing questions, and to create scaffolded discussions of theory and application between the in-service and pre-service instructors. They were also free to share conflicting beliefs about the theories and practices, contrary to commonly adhered to tenets in the field, which allowed for an open consideration of the perspective. One negative finding influencing the efficacy of the listserv medium was when a student harbored an out-dated pedagogical perspective and attempted to persuade others of his/her belief system. This presentation will demonstrate findings through the students’ voices, outline the listserv technique and present strategies for avoiding certain pitfalls with its use.

ADVOCACY IN LOW-INCIDENCE DISTRICTS: UNDERSTANDING AND RESOLVING ISSUES. Annie Pemberton and Lisa Carlson, undergraduate students, with Kate Reynolds, faculty, same department. 
Midwest Regional TESOL Conference, Bloomington, MN, 7-9 Nov. 2002.

California’s Proposition 227 eliminating bilingual education programming generated debates over ESL programming throughout the country. Community members and educators at all levels are questioning HOW ESL should be taught, and IF ELLs are entitled to special support. Two programmatic options have emerged, bilingual education or English-only. Although these approaches to language instruction are vastly different, some Boards of Education in low-incidence districts believe that these curricular options are synonymous. Some stakeholders believe that the opportunity is neigh to eliminate ALL English language development programs from the PreK-12 curricula and to ease financial strains on the spending of the Board of Education. In one town, the Board of Education would like to abolish all ESL programming even though it is against the United States’ Civil Rights Act, and they are winning. This interactive advocacy discussion will explore the factors of finance, and residents’ understanding of language development and the needs of non-native speakers, share the pertinent laws, define differences in programming options, recommend alternative programming, and discuss the role of ESL practitioners in advocacy.

DEVELOPMENT OF INTERLANGUAGE PREPOSITION ACCURACY IN ADVANCED ESL WRITING. Elizabeth Peters, undergraduate student, with Kate Reynolds, faculty, same department.

This research study brings interlanguage theory (Selinker, 1972) to bear on the writing
process, and investigated written assignments collected from the writing portfolio of an advanced ESL (English as a Second Language) student from Spain in a university-level academic writing course at a small liberal arts university. Written assignments were analyzed for preposition use via qualitative research methods, which revealed that student progress in preposition accuracy while writing was influenced by formal instruction of the writing process. Patterns emerged that were significant to current best practice in second language teaching, especially in regards to the procedures involved in implementing the writing process. This presentation will discuss interlanguage theory, research methodology, findings relevant to international students’ preposition use in the writing process, connections to interlanguage theory, and pedagogical ramifications.

ADVOCACY IN LOW-INCIDENCE DISTRICTS FOR SECOND GENERATION LEARNERS. Heather Williams, undergraduate student, with Kate Reynolds, faculty, same department.

Since Proposition 227 was passed in California in 1998 eliminating bilingual education programming for English language learners (ELLs), numerous states have followed suit (Colorado and Massachusetts are the latest). Throughout the country debates over ESL programming are being argued. Community members and educators at all levels are questioning HOW ESL should be taught, and IF ELLs are entitled to linguistic support. Two programmatic options have emerged as opposite ends of the continuum, bilingual education or English-only. Although these approaches to language instruction are vastly different, some Boards of Education in certain communities believe that these curricular options are the same. Many low-incidence districts, areas with a low proportion of English Language Learners (ELLs) per capita, have experienced increased pressure due to these national debates. Many stakeholders (district administrators, Boards of Education, etc) believe that with the passage of Proposition 227 the opportunity is neigh to eliminate ALL English language development programs from the PreK-12 curricula and to ease financial strains on the spending of the districts. In one town, the Board of Education would like to abolish all ESL programming even though it is against the United States’ Civil Rights Act, and they are winning. This interactive advocacy discussion will explore the factors of finance, race, and residents’ understanding of language development and the needs of non-native speakers of English in this specific case, share the laws pertinent to language development programs in the schools, define the differences between bilingual education and English-only, explain why the “sink or swim” approach is not practical, ethical, or legal, recommend alternative programming that would remedy the inequality of program elimination, and discuss the role of teachers, aides, teacher trainers, and researchers in advocacy for public schools in low-incidence districts.
The purpose of this project is to provide archaeologists with a better understanding of the aerial extent, stratigraphy, and geoarchaeological significance of fluvial landforms within the South Saskatchewan River valley, from St. Louis, Saskatchewan downstream to the confluence with the North Saskatchewan River. The study reach is located within the Forks Locality, central Saskatchewan, one of four archaeologically-rich, ecologically complex localities across the Canadian Prairies under investigation by SCAPE (Study of Cultural Adaptations within the Prairie Ecozone). Aerial photographic interpretation and dGPS data were combined using ARCGIS software to map Holocene fluvial terraces identified in the study reach. Stratigraphy and sedimentology of terrace deposits were investigated by describing, photographing, and sampling (for detailed laboratory analyses) Geoprobe cores and cutbank exposures. Four terraces (T1-T4) and an active floodplain (T0) are observed in the study reach. T0 through T2 are Holocene in age (0-2000 BP, 2000-4000 BP, and 4000 to 8000 BP respectively) and are composed of a silty vertical accretion facies with numerous thin, weakly expressed buried soil profiles over sand and gravel lateral accretion facies. Abandonment of these terraces and subsequent incision resulted from adjustments to local base level changes controlled by glacial Lake Agassiz. T3 and T4 are cut into till or glaciolacustrine deposits and are graded to levels of glacial lakes Saskatchewan and Agassiz during terminal late-Pleistocene deglaciation. Future geoarchaeological research should focus on T0-T2. These deposits are most likely to contain well-preserved in situ cultural remains and associated materials suitable for detailed paleoenvironmental analysis.

THE COMPANION GUIDE TO THE CULTURAL MAP OF WISCONSIN: A PROTOTYPE. Beverly Caldwell and Carrie Morrell, undergraduate students, with Timothy Bawden, faculty, same department.


This poster displays a prototype of entries that will be included in an ongoing research effort to produce the Companion Guide to the Cultural Map of Wisconsin. The Cultural Map of Wisconsin was published in 1996 by the University of Wisconsin Press and drew national attention and acclaim. In general, the map cartographically displays 1200 important cultural places in the state with 400 text blocks and 800 icons. The icons are identified in an accompanying booklet, however, the description of the sites are vague. The companion guide will include greater coverage of these places along with graphics, such as maps, tables, and historic photographs. It will compliment the Cultural Map and serve as a cultural atlas on its own.

ARCHAEOLOGICAL GPR INVESTIGATION AT RENNES-LE-CHATEAU (FRANCE) UTILIZING 3-D ANIMATION. Ryan DeChaine, undergraduate student, with Garry Running, faculty, same department.


Ground penetrating radar (GPR) surveys were conducted at several sites within the hillside town of Rennes-le-Château, France. The town is linked with many traditions and mysteries associated with the Templar movement and its treasure including, according to some documents, the possible location of the Holy Grail. Key areas of GPR investigation were: the Tour Magdala, the Church of St. Mary Magdalen, and the surrounding gardens. The GPR survey at the Tour Magdala was carried out to image any cultural features (i.e. burial crypts, documents, currency, etc.) located beneath the tower floor or around its outer base. 2-D results indicate the tower is built on the local bedrock with possible surface and
subsurface disruptions in the local GPR stratigraphy, while 3-D cubes show a hyperbolic reflection pattern, which may indicate the presence of a buried object. The GPR survey at the Church was carried out to image any cultural features that may be located beneath the church floor. 2-D and 3-D images show a subsurface anomaly (hyperbolic feature) that extends along several parallel lines that may indicate a burial crypt. Utilizing industry standard software (pulse EKKO 3D, RockWare), 3-D visual modeling of data collected from the 2001 and 2002 research expeditions allowed for the creation of accurate 3-D animations of subsurface anomalies. Detailed animations from this investigation will be used to advise the Government of France’s Archaeological Branch where to excavate at Rennes-Le-Château.

ARCHAEOLOGICAL GPR INVESTIGATION AT RENNES-LE-CHATEAU (FRANCE) UTILIZING 3-D ANIMATION. Ryan DeChaine, undergraduate student, with Harry Jol, faculty, same department.


Ground penetrating radar (GPR) surveys were conducted at several sites within the hillside town of Rennes-le-Château, France. The town is linked with many traditions and mysteries associated with the Templar movement and its treasure including, according to some documents, the possible location of the Holy Grail. Key areas of GPR investigation were: the Tour Magdala, the Church of St. Mary Magdalen, and the surrounding gardens. The GPR survey at the Tour Magdala was carried out to image any cultural features (i.e. burial crypts, documents, currency, etc.) located beneath the tower floor or around its outer base. 2-D results indicate the tower is built on the local bedrock with possible surface and subsurface disruptions in the local GPR stratigraphy, while 3-D cubes show a hyperbolic reflection pattern, which may indicate the presence of a buried object. The GPR survey at the Church was carried out to image any cultural features that may be located beneath the church floor. 2-D and 3-D images show a subsurface anomaly (hyperbolic feature) that extends along several parallel lines that may indicate a burial crypt. Utilizing industry standard software (pulse EKKO 3D, RockWare), 3-D visual modeling of data collected from the 2001 and 2002 research expeditions allowed for the creation of accurate 3-D animations of subsurface anomalies. Detailed animations from this investigation will be used to advise the Government of France’s Archaeological Branch where to excavate at Rennes-Le-Château.

GIS AS GEOARCHAEOLOGY: TESTING AN ARCHAEOLOGICAL HYPOTHESIS AT THE HOKANSON SITE, TIGER HILLS, SOUTH CENTRAL MANITOBA. Ryan DeChaine, undergraduate student, with Garry Running, faculty, same department.


The Tiger Hills, a hummocky landscape in south central Manitoba is under investigation by members of SCAPE (Study of Cultural Adaptations within the Prairie Ecozone). The Hokanson site, located in the Tiger Hills and occupied ~1500 years ago lies along slopes marginal to a small wetland. Archaeological investigations suggest the site was a bison kill and processing station. This interpretation hinges on the hypothesis that bison were corralled at the base of a ridge adjacent to the wetland and subsequently dispatched and butchered at the site. The purpose of this research is to apply GIS-based techniques to,
1) reconstruct paleotopography at the site and, 2) to determine if (or how) the bison trap would have functioned as currently hypothesized. Topographic data was collected using Trimble ProXR dGPS packs and total station survey systems. Excavated areas and hydrology were added to digital elevation models (DEM) utilizing ArcView 3.2. “Bison eye” line-of-sights and viewsheds were then constructed and analyzed (3-D Analyst) to test the trap hypothesis. Results indicate the 3-D model and view sheds provide useful visualizations and that the bison trap hypothesis is sound. In addition, we are beginning to address a wider variety of archaeological research questions using our GIS-based approach.

GLOBAL POSITIONING SYSTEMS AND MICRO GEOGRAPHIC INFORMATION SYSTEMS IN THE VILLAGE OF ALMA CENTER, WISCONSIN. 
Jedediah Durni and Robert Passow, undergraduate students, with Sean Hartnett, faculty, same department. 

This poster presents a cost-effective modernized mapping and data storage system for Alma Center, a small village in Wisconsin. New State Laws often require small municipalities to produce up to date spatial information, a task that is financially unfeasible in most cases if current spatial data management techniques are used. This project provided the village with up to date maps and a modernized Geographic Information System for data storage that can function within existing budgetary constraints. Previous information for infrastructure location the village maintained is more than fifty years old and consists of maps and notebooks filled with location data. The specific impetus for this GIS mapping project was to locate all water shut offs for residences and other buildings within the village so all utility crews and village workers could locate the water shut offs more rapidly and reduce guesswork, the previously entailed method. A global positioning system (GPS) was used to gather the spatial data. The GPS system (Trimble ProXR) is a very accurate system, acquiring data with sub-meter accuracy. These data were then organized into a geographic information system (GIS) for data storage and presentation. The GPS data was imported, analyzed and drafted in Pathfinder, ArcView 3.2, and Adobe Illustrator, to create a user friendly, interactive web-based data storage and retrieval system and maps. The project resulted in an inexpensive and modernized mapping system that solved the original problem. Moreover, the village can update and expand the GIS easily with available expertise and within existing budgetary constraints.

ECONOMIC DISPARITY IN WISCONSIN’S NORTHWOODS. Lori Hafeman, undergraduate student, with Lisa Theo, faculty, same department. 

Economic dependence on tourism and recreation has created a dual economy in Wisconsin Northwoods. On one side are the long-term residents who have 1) lost higher paying jobs in the forest industry due to increased technological advances, 2) been forced to accept low paying jobs in the service-based tourism industry, and/or 3) been forced off of their land due to rising property values. On the other side are the retirees and vacationers who are buying permanent housing in the region. More often than not, their permanent residence is elsewhere. These differences may lead to significant class conflicts in the coming years. This project investigates socio-economic change in Wisconsin’s Northwoods region. Regional patterns of education, employment, age structure, family structure, length of residence, and seasonal housing are compared against patterns found for the entire state of
Wisconsin. Changes over time are analyzed as well. Using statistical analysis and GIS, this study hypothesizes that distinct patterns will become apparent for the Northwoods proving it to be a separate vernacular region.

**CONFINED ANIMAL FEEDLOT OPERATIONS IN THE US. Erin Heidtke**, undergraduate student, with **Lisa Theo**, faculty, same department. 

The emergence of large Confined Animal Feeding Operations (CAFOs) has raised a number of serious environmental questions in recent years. The high concentration of animals in one area leads to an enormous potential for the rapid spread of diseases than would otherwise be possible. Furthermore, the large amounts of wastes created threaten clean water supplies. As a result groundwater and streams are vulnerable to run-off and contamination by animal fecal matter. In order to prevent water contamination and the spread of diseases, it is necessary to map the location of CAFO’s for reference. Permitting processes vary widely from state to state and there is no comprehensive database of CAFOs at the national level. The purpose of this study was to build a national CAFO database, map CAFO locations, and to analyze the pattern and magnitude of these operations in order to gain a clear picture of potential environmental and sanitation problems.

**ECONOMIC DISPARITY IN WISCONSIN’S NORTHWOODS. Erin Heidtke**, undergraduate student, with **Lisa Theo**, faculty, same department. 
*Association of American Geographers Annual Meeting, New Orleans, LA, 4-8 March 2003.*

Economic dependence on tourism and recreation has created a dual economy in Wisconsin Northwoods. On one side are the long-term residents who have 1) lost higher paying jobs in the forest industry due to increased technological advances, 2) been forced to accept low paying jobs in the service-based tourism industry, and/or 3) been forced off of their land due to rising property values. On the other side are the retirees and vacationers who are buying permanent housing in the region. More often than not, their permanent residence is elsewhere. These differences may lead to significant class conflicts in the coming years. This project investigates socio-economic change in Wisconsin’s Northwoods region. Regional patterns of education, employment, age structure, family structure, length of residence, and seasonal housing are compared against patterns found for the entire state of Wisconsin. Changes over time are analyzed as well. Using statistical analysis and GIS, this study hypothesizes that distinct patterns will become apparent for the Northwoods proving it to be a separate vernacular region.

**MIGRATION STREAMS TO AND FROM WISCONSIN’S NORTHWOODS. Erin Heidtke**, undergraduate student, with **Lisa Theo**, faculty, same department. 

Wisconsin’s Northwoods recreational area is experiencing rapid socio-economic changes. Local, long-term residents of the Northwoods often rely on seasonal work with low pay and minimal benefits. Wealthy second homeowners and recent retirees are taking over much of the waterfront property in the Northwoods causing increased land values and
the consequent increased property taxes. Many locals are forced off of their land. The growing number of new “upscale” residents increases the demand on natural resources and governmental services. Community structure could be threatened and tremendous class conflicts could result as the disparity between the wealthy and the poor increases. This project attempts to determine if the “new” residents to the Northwoods really are new or just returning migrants. Cohort data shows that persons in their twenties leave the Northwoods, but the numbers rebound for persons in their thirties and forties. This project uses newspaper obituary data in an effort to determine where out-migrants move to, where in-migrants come from, and what proportion of former residents end up returning in later years. Focusing on the Wisconsin Northwood’s community of Tomahawk, obituaries were retrieved from the Tomahawk Leader Newspaper for each year between 1940 and 2000 for the months of June and July. Data include date of death, location of birth, death, and former residences, occupation, and the location of survivors. Data was compiled in a GIS database in order to determine the spatial patterns of migration streams to and from Wisconsin’s Northwoods.


This GPS project was designed to determine the level of security at the University of Wisconsin-Eau Claire. For this analysis, we chose to focus on two distinct variables: The lightpoles and the emergency phones on campus. Other factors can influence security measures, but lighting and availability of these specialized phones were excellent factors for our analysis. All data for this project was retrieved by the use of a Trimble Pro Differential GPS unit. We gathered data for the more than 300 lightpoles on campus, and the 20 emergency phones. We then proceeded to map the data over an aerial photograph of the area for better analysis. Maps of illumination coverage on campus were created, in addition to buffers of emergency phone distances. The results of these maps were then used to determine if more lighting is necessary on campus, and whether or not additional emergency phones are needed.


The U.S. brewing industry has been historically concentrated in the Midwest. In the decades following the Civil War the number of breweries in this region totaled over one thousand, accounting for half of the country’s total. The pattern at that time was largely related to cultural patterns, particularly German settlement, and most of the breweries were small and had just a local market. As the industry evolved and technology changed, large brewers emerged, operating on a national scale, and small scale brewing declined. The rise of micro-breweries and brewpubs throughout the country during the past two decades, however, demonstrates another chapter in the industry’s changing geography. This poster will examine the changing spatial pattern of the brewing industry in the Midwest over the period 1890 to the present. It will identify factors associated with these spatial changes at a local, region, and national scale. The data come from a variety of secondary and primary sources including histories, trade publications, and online listings.
USING THE WEB TO TEACH GEOSCIENCE COMMUNICATION IN UPPER DIVISION UNIVERSITY COURSES: A CLASS PROJECT CASE-STUDY: GS2 GEOMORPHOLOGY AND QUATERNARY GEOLOGY. Shawn Kyle, undergraduate student, with Garry Running, faculty, same department.

Familiarizing students with all three steps in the geoscience communication process (research, documentation, and popularization) is an important focus of university geoscience education, particularly in upper division, project-based courses. Providing quality opportunities for students to learn these important communication skills is becoming increasingly challenging given shrinking funding for post-secondary education. By means of a class project case study, the purpose of this poster is to present a methodological strategy to overcome these challenges by using the internet: 1) as a tool for teaching students how to communicate their own geoscientific research, and 2) as a venue for documenting and disseminating the results of their research to a wider (popular?) audience. In this case-study, a project-based, field-based approach was used to expose 26 upper division students (from Geology, Geography, and Biology) to basics of soil geomorphology. Learning objectives include: observation, description, and documentation of soil morphology in the field; the identification of soil forming factors and catenary relationships among soil profiles across a study site, and providing a landowner with soil-knowledge based land-use recommendations. A study site was selected. Students were divided into eight groups, each responsible for investigating a soil profile in the field. Groups were also assigned additional writing tasks (all the parts of a traditional scientific paper were prepared). Webpage and website design decisions were determined by class consensus. One student was elected “webmaster” to be responsible for: collating and organizing group contributions, and building the final web-ready version of the report. The website, organized around a central index page from which are linked all group contributions was produced using Microsoft FrontPage. FrontPage was selected because it is relatively inexpensive and is relatively easy to learn.

We report several advantages to our approach to teaching the geoscientific communication process. Students learned the practical steps of geoscientific communication. Students learned to operate as group members within larger organizations similar to those they are likely to experience throughout their professional careers. Students learned the basics of web design and publishing, an advantage in the job market. Finally, students indicate that preparing the final class project on the web elevated the experience beyond that of a mere academic exercise because they knew that, besides their classmates and instructor, their work will be viewed and evaluated by a wider outside audience that may include prospective employers.

GEOGRAPHIC INVESTIGATION OF HOLOCENE TERRACES ALONG THE LOWER SOUTH SASKATCHEWAN RIVER, CENTRAL SASKATCHEWAN, CANADA. Carrie Morrell, undergraduate student, with Garry Running, faculty, same department.


The purpose of this project is to provide archaeologists with a better understanding of the areal extent, stratigraphy and geoarchaeological significance of fluvial landforms within the South Saskatchewan River valley, from St. Louis, Saskatchewan downstream to the confluence with the North Saskatchewan River. The study reach is located within the Forks
Locality, central Saskatchewan, one of four archaeologically-rich, ecologically complex localities across the Canadian Prairies under investigation by SCAPE (Study of Cultural Adaptations within the Prairie Ecozone). Aerial photographic interpretation and dGPS data were combined using ARCGIS software to map Holocene fluvial terraces identified in the study reach. There are 3 terraces identified with an active floodplain. Moving downstream the terraces decrease in size, while scarps become more prominent. The upper terrace is the most extensive. The middle terraces shows prominent swell and swale topography and the lower terrace is difficult to identify as it is covered with thick forest vegetation. Radiocarbon dating of buried bison bone indicates the lower and middle terraces are Holocene in age and therefore have the best potential for archaeological finds.

A GEO-ARCHAEOLOGICAL DATABASE & SEARCH ENGINE FOR THE CAVE OF LETTERS, ISRAEL. Chris Morton, undergraduate student, with Harry Jol, faculty, same department.


GROUND PENETRATING RADAR AND GLOBAL POSITIONING SYSTEM: ARCHEOLOGICAL AIDS AT QUMRAN, ISRAEL. Robert Passow, undergraduate student, with Harry Jol, faculty, same department.


During the summer of 2002, ground penetrating radar (GPR) and global positioning system (GPS) surveys were conducted as part of an international archaeological research expedition to Qumran, Israel. Earlier studies have shown that GPR can provide images of the subsurface indicating gravesites and caves. This paper presents recent findings at two Qumran sites: Tomb 1000 and a possible latrine. At Tomb 1000, two sets of 2,000-year-old re-buried female bones were discovered in 2001. The site was then surveyed as part of the graveyard map being produced. Upon return to the site in 2002, a detailed grid of GPR lines were collected using 225 and 450 MHz frequency antennae. From the GPR and GPS datasets, 3-D imagery indicated reflections that suggested the site should be excavated. Upon excavation a significant discovery was made: a buried body and associated artifacts. The second site used GPS and GPR in locating a possible latrine that individuals would have had to use when they lived at Qumran. Two 3-D grids using 225 MHz antennae revealed two possible sites for further excavation. GPR and GPS significantly aided the research expedition at Qumran during the 2002 field season.

GROUND PENETRATING RADAR AND GLOBAL POSITIONING SYSTEM: ARCHAEOLOGICAL AIDS AT QUMRAN, ISRAEL. Robert Passow, undergraduate student, with Harry Jol, faculty, same department.


Ground penetrating radar (GPR) and global positioning system (GPS) surveys were conducted as part of the 2002 archaeological research expedition to Qumran, Israel. Qumran is located on the northwest shore of the Dead Sea, and is noted as the site closest to the caves where the Dead Sea Scrolls were found, one of the most important manuscript discoveries ever made. Earlier studies at Qumran have shown that GPR can provide images of the subsurface that indicate potential caves and gravesites. The objective of this paper is to
present research results from two sites associated with Qumran. In 2001, while excavating the first site (a mourning enclosure -Tomb 1000), two sets of 2000-year-old re-buried female bones were discovered. In 2002, a detailed GPR grid was laid-out at Tomb 1000 and data was collected using both 225 and 450 MHz frequency antennae. Based on GPR and GPS data, 3-D imagery indicated anomalous reflections, which provided evidence for further excavation. The re-excavation of Tomb 1000 yielded a significant discovery of a subsurface tomb containing a skeleton with associated grave goods. Investigating the second site utilized the combination of GPR and GPS in an attempt to locate the latrine individuals at Qumran would have used. Religious regulations recorded in the Dead Sea Scrolls indicate that the latrines should be located 1000 cubits away from habitation. Two grids using 225 MHz antennae revealed two possible sites for future excavation. GPR and GPS both proved to be valuable tools during the 2002 research expedition at Qumran.


Changes in housing costs and values can tell a great deal about a geographic region. This poster focuses on the changes in new housing costs and reported values from the U.S. Census Bureau in the city of Eau Claire from 1980 to 2000. It shows the changing geographic patterns during this period and identifies factors associated with them. These factors include the age of housing, age structure of the population, proximity to schools and/or parks, access to major highways, distance from new commercial development, distance from the central business district (CBD), and proximity to land zoned for industry. The analysis was conducted at the block group level, which presented advantages over other units of analysis because the boundaries have changed very little from the 1980 Census to the 2000 Census.

MAPPING THE ACCURACY OF DGPS. Don Porschien and Paul Sandstrom, undergraduate students, with Garry Running, faculty, same department.

This poster presents research to quantify similarities and differences between various Global Positioning System receivers used for mapping and other geoscience fieldwork. We compared expensive, survey grade Differential Global Positioning System units to cheaper, handheld Global Positioning System receivers. Equipment cost, data accuracy, efficiency, and ease of use were all analyzed. Costs range from a few hundred to several thousand dollars. Accuracy was measured by traversing the same routes with multiple Global Positioning System receivers at the same time, both with and without differential beacons, and then plotting recorded points on a map. Terrain, weather, vegetation and landcover, time of day, season, and satellite availability are some of the variables considered. Smaller handheld units are limited as to how they store data. They store only points, as coordinate pairs in a list, which must be manually entered into the database of a Geographic Information System or mapping program. Differential Global Positioning System receivers, used daily by professionals, store points, lines, and regions, as user-defined data dictionary symbols and data tables, which are easily uploaded to a laptop or desktop computer through a cable. Where data points collected by a handheld unit are limited to single-symbol representation, a sur-
Survey grade Differential Global Positioning System receiver can literally represent each geographic coordinate recorded as a unique symbol, and much more accurately. Conclusion: Handheld units are acceptable for general vicinity reference, but Differential Global Positioning System receivers can’t be beat for mapping when accuracy counts—you get what you pay for.


The Buffalo River has flowed into Rieck’s Lake, a backwater lake that fills the mouth of its valley, since 1935 when Lock and Dam 4 was closed on the Mississippi River. Today Rieck’s Lake is largely filled with sediment. Given its location at the mouth of a 1100-km² agricultural watershed, it is not surprising that the lake has experienced dramatic sedimentation. It is, however, surprising that the rate of infilling has not slowed in recent years despite widespread efforts to control soil erosion in the Buffalo River watershed. The purpose of this research was to determine whether a sediment source other than agricultural land could be the cause of Rieck’s Lake demise in recent years. Its specific objective was to determine if tributary stream channels have themselves been a significant source of the sediment delivered by the Buffalo River to Rieck’s Lake. To achieve this objective, we relocated and resurveyed more than 25 transects across tributary streams, which were originally surveyed in 1992 and 1993. From these resurveys, we found that tributary stream channels have been remarkably stable over the last 8 to 9 years, indicating that they have not been important sediment sources. Widening at two sites along a recently-incised channel in a small (3 sq km) tributary watershed were the only notable instances of recent channel erosion that we identified. We in fact found shallower, narrower channels and modestly aggraded floodplains at a few sites, suggesting that tributary streams have, in places, been net sediment sinks.


Outdoor Recreation enthusiasts are attracted to Wisconsin’s Northwoods for a variety of available activities and attractive sceneries. Over the past two decades the number of vacationers and retirees building permanent dwellings on premium-lake and riverside properties has greatly increased. The purpose of this research is to aid us in understanding the complex issues surrounding the growing divide between the rich and the poor in Wisconsin’s Northwoods. Focusing on the Hayward and Tomahawk areas, this illustrated paper examines the land-use and class structure change around waterfront properties. County tax assessment records were used in the data planning, collection process, and diagramming of the spatial changes in the areas.

This project involved the creation of a detailed, multi-layered GIS site map of the Lower Chipewa River Confluence Field Station. This 138-acre property, located 30 miles southwest of Eau Claire on the banks of the Chipewa River, was recently leased from the State of Wisconsin to support the research activities of UW-Eau Claire faculty and students. The core of this site map is a differential Global Positioning System (dGPS) survey of the property and surrounding environs. Using Trimble ProXR dGPS with sub-meter positional accuracy, the infrastructure of roads, buildings, trails, rock outcroppings and vegetation were mapped. A Digital Elevation Model (DEM) of the 3D dGPS data (lat-long-elevation) was created to capture the fluvial topography present at this site that includes river bluffs, terraces, and the river channel and flood plane. A detailed bathymetric map of river depths was constructed for a mile long stretch of the Chipewa River bordering the study site. Significant changes in the channel’s location are gauged by draping this map of the current river channel over the 1992 high-resolution Digital Ortho Quadrangle (DOQ) images. All of this survey data will be integrated into a comprehensive GIS of geo-referenced dGPS, DEM and DOQ data.

GEOLOGY


The purpose of this project is to provide archaeologists with a better understanding of the aerial extent, stratigraphy, and geoarchaeological significance of fluvial landforms within the South Saskatchewan River valley, from St. Louis, Saskatchewan downstream to the confluence with the North Saskatchewan River. A collaborator from geography determined the extent of the terraces. Stratigraphy and sedimentology of terrace deposits were investigated by describing, photographing, and sampling (for detailed laboratory analyses) Geoprobe cores and cutbank exposures. Three terraces (T1-T3) and an active floodplain (T0) are observed in the study reach. T1 and T2 are Holocene in age (1000-2000 BP and 5000-9000 BP, respectively) and are composed of a silty vertical accretion (floodplain) facies with numerous thin, weakly expressed buried soil profiles over sand and gravel lateral accretion (channel) facies. Abandonment of these terraces and subsequent incision resulted from adjustments to local based level changes controlled by glacial Lake Agassiz. T3 is cut into till or glaciolacustrine deposits and is graded to levels of glacial lakes Saskatchewan and Agassiz during terminal late-Pleistocene deglaciation. T1 and T2 floodplain sediments have the best potential for preservation of Holocene cultural materials.

The purpose of this project is to provide archaeologists with a better understanding of the aerial extent, stratigraphy, and geoarchaeological significance of fluvial landforms within the South Saskatchewan River valley, from St. Louis, Saskatchewan downstream to the confluence with the North Saskatchewan River. The study reach is located within the Forks Locality, central Saskatchewan, one of four archaeologically-rich, ecologically complex localities across the Canadian Prairies under investigation by SCAPE (Study of Cultural Adaptations within the Prairie Ecozone). Aerial photographic interpretation and dGPS data were combined using ARCGIS software to map Holocene fluvial terraces identified in the study reach. Stratigraphy and sedimentology of terrace deposits were investigated by describing, photographing, and sampling (for detailed laboratory analyses) Geoprobe cores and cutbank exposures. Four terraces (T1-T4) and an active floodplain (T0) are observed in the study reach. T0 through T2 are Holocene in age (0-2000 BP, 2000-4000 BP, and 4000 to 8000 BP respectively) and are composed of a silty vertical accretion facies with numerous thin, weakly expressed buried soil profiles over sand and gravel lateral accretion facies. Abandonment of these terraces and subsequent incision resulted from adjustments to local base level changes controlled by glacial Lake Agassiz. T3 and T4 are cut into till or glaciolacustrine deposits and are graded to levels of glacial lakes Saskatchewan and Agassiz during terminal late-Pleistocene deglaciation. Future geoarchaeological research should focus on T0-T2. These deposits are most likely to contain well-preserved in situ cultural remains and associated materials suitable for detailed paleoenvironmental analysis.


The North Doherty Mountain Intrusive Complex (NDMIC) is one of several satellite plutons related to the areally extensive Boulder batholith of southwestern Montana. The Boulder batholith comprises multiple plutons and intrusive phases, and the magmatism has long been thought to be the result of subduction due to its calc-alkaline granodioritic composition. The batholith is situated in the Helena salient, which differs from other parts of the North American Cordilleran foreland because there, magmatism spatially and temporally overlaps with deformation in the foreland fold and thrust belt. The North Doherty Mountain Intrusive Complex (NDMIC) is one of several satellite plutons related to the Boulder batholith and represents an ideal microcosm of the batholith for petrogenetic and structural studies because it exposes both mafic and felsic units and was emplaced in the limb of a major thrust related fold. We present new geologic mapping and detailed trace
element geochemical analyses to show that the entire mafic-to-felsic suite of rocks in the NDMIC are cogenetic and shoshonitic in character. Shoshonites are unusual magmas that are distinguished by their high concentrations of K, Rb, Sr, Ba, Zr, and Th contents, and are thought to represent partial melting at great depths within the mantle wedge above a subducting slab. The presence of shoshonitic magma in the Cordilleran foreland fold and thrust belt provides important clues into the nature of the formation of this unusual magma type and can provide insights into our understanding of magmatism in foreland structural settings.


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Ground-penetrating radar (GPR) was used at the Flintstone Hill site to: 1) determine the lateral continuity of the stratigraphic sequence observed in cutbank exposures, and 2) refine sedimentologic and post-glacial paleoenvironmental interpretations. Flintstone Hill (FSH) is a stabilized parabolic dune in the Glacial Lake Hind Basin, southwestern Manitoba. The dune-dominated landscape of this basin is one of four localities under investigation by researchers working on the SCAPE Project (Study of Cultural Adaptations within the Prairie Ecozone). New data, combined with results of previous work allow interpretation of environment of deposition of five post-glacial sedimentologic units exposed at FSH. The basal mud and peat unit represents the final regression of Glacial Lake Hind by 9250 (RCYBP). Glacial Lake Hind received input from glacial Lake Souris and drained into glacial Lake Agassiz through the Pembina Spillway. This unit is overlain by a carbonate-
rich mud and peat unit that indicates deposition in a closed-basin lake. Fine- to medium-grained sandy cross-strata up to 1.5 m thick indicates burial by a migrating eolian dune (6700 RCYBP). This unit is capped by a condensed zone that indicates multiple phases of sand sheet deposition interspersed with periods of stability and soil formation between 5500 and 3250 RCYBP. Evaporitic carbonate enrichment of this unit indicates increased aridity. Finally, a parabolic dune migrated southeastward into the site. Episodic instability ensued, as indicated by scour- and-fill structures and multiple buried soils. Iron-rich clay bands straddle the boundary between the upper two units.

Five GPR transects were imaged across FSH; penetration depth was only five meters. The high iron and clay content of the clay bands likely attenuates the GPR signal. A prominent sub-horizontal reflection was imaged four meters below the highest dune crest. Cutbank exposures indicate this reflection corresponds approximately to the top of the condensed zone. Analysis of GPR data confirmed the lateral continuity of the stratigraphic sequence described above, and in addition revealed: 1) concave-upward reflections in a NW-SE transect suggesting dune migration to the NE in the lower dune unit, inconsistent with modern dune orientation and wind regime, and 2) several anomalous diffraction patterns indicating possible buried archaeological materials.


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A buried mid-Holocene eolian sand deposit is observed in three cut-bank exposures along the Souris River in the Lauder Sand Hills, glacial Lake Hind Basin, southwestern Manitoba. This deposit, formed from 6760-5350 RCYBP, has no known surface expression. Here, we present a partial reconstruction of the Lauder Sandhills landscape ~6000 RCYBP, supporting SCAPE (Study of Cultural Adaptations within the Prairie Ecozone), a multi-disciplinary project focused on Holocene human-environment interaction in the Canadian Prairies. The mid-Holocene eolian deposit overlies a lacustrine/wetland unit formed between 10,420 and 6,760 RCYBP. Where the sand overlies silt/clay the contact is distorted by loading. Where it overlies peat, wood fragments are incorporated in the basal eolian sand and in-situ tree stumps extend up into the sand. Sand-sheet/fluvial deposits formed between 5350 and 3250 RCYBP overlie the eolian unit. A late Holocene parabolic dune unit caps the sequence.

The eolian unit comprises two subangular to subrounded, fine-medium sand facies. 1) Packages up to 1 m thick of low-angle cross-stratified-horizontally laminated strata consist of thin, laterally continuous-lenticular beds with interbedded lenses and layers of coarser (more medium-grained fraction) sand. Planar-irregular sub-horizontal to gently dipping strata (<100) contain small (<10 cm) packages of more steeply dipping strata (12-150) locally. 2) A set of high-angle cross-strata up to 1.5 m thick contains packages up to 3 cm thick of millimeter-scale laminations alternating with predominantly medium-grained strata up to 3 cm thick. Locally, laminated packages are lacking. Strata dip NE to ESE (42-1070) at angles up to 320. One or both facies are observed in any one profile. The high angle facies typically overlies the low angle facies where both are present.

The high-angle facies represents slipface deposition with rainfall/grainflow strata alternating with packages of wind ripple strata. Parabolic or crescentic dunes >1.5 m high migrated northeast, or eastward in a bimodal wind regime. This contrasts with late Holocene dune migration to the southeast. The low-angle facies represents an irregular sand sheet surface with vegetation disrupting flow, producing irregular and discontinuous strata and packages of steeper strata formed on small shadow dunes. Together, these facies suggest a landscape where dunes interspersed with and migrated over vegetated sand sheets. Similar dune activity is reported prior to about 4550 RCYBP in the Brandon Sand Hills, about 100 km to the northeast. More precise ages are needed to determine whether dune activity in these two areas are coeval.
The eastern Bella Coola region straddles the boundary between the Coast Plutonic Complex in the west from Early Jurassic to Early Cretaceous island arc assemblages of the Stikine Terrane in the east. Numerous, compositionally diverse plutons, which become progressively younger and more voluminous from east to west, intrude the layered volcanic-sedimentary successions. The plutonic rocks are distinguished and delimited into intrusive suites on the basis of field relationships, lithology, mineralogy, alteration assemblages, geochemical attributes and age. Intrusive suites in the Bella Coola region, include, from oldest to youngest: 1) Firvale suite (ca. 132-149 Ma), characterized by pervasively chloritized mafics, saussuritized plagioclase, and interstitial, dark-pink alkali feldspar which gives a characteristic pink and green mottled appearance. Preliminary geochemical analysis of the Firvale suite suggests an uncontaminated volcanic arc origin. Rapid exhumation of this suite is indicated by an erosional unconformity below the overlying Early Cretaceous volcanic assemblage; 2) Desire suite (ca. 120 Ma), a texturally and compositionally diverse assemblage of hornblende gabbro/diorite to granodiorite which is commonly foliated and contains abundant metavolcanic xenoliths; 3) Fougner suite, a distinct salt and pepper, sphene-bearing tonalite to granodiorite that is syn- to post-kinematic with respect to the Paleocene Coast Shear zone; and 4) Four Mile suite, a homogenous coarse-grained garnet-bearing muscovite-biotite granite that post-dates deformation associated with the Coast Shear zone, and includes a preliminary U-Pb date of 72.9 ± 0.5 Ma. Trace element patterns from the Four Mile suite display a LILE pattern characteristic of continental volcanic arcs. Ongoing petrographic, geochemical, isotopic and geochronological analyses will further refine suite designations and permit a detailed assessment of the magmatic evolution of the Bella Coola region.

EFFECT OF HIGH-RELIEF TOPOGRAPHY ON DEGLACIATION PATTERNS, PHILLIPS 7.5’ QUADRANGLE, WEST-CENTRAL MAINE. Rachel Greve, undergraduate student, with Kent Syverson, faculty, same department.


The Phillips 7.5’ Quadrangle, west-central Maine, is underlain by Devonian intrusive and phyllic rocks of the Appalachian Mountain belt and is located above the Wisconsinan marine limit. The Sandy River flows approximately east-west through the Phillips Quad. Mt. Abraham, a topographic high with 960 m of relief, is directly north of the Phillips Quad. Spruce Mtn. and Day Mtn. are NE- SW-trending ridges that rise 370 m above surrounding areas in the southern part of the quad. Striae in the highest parts of the area indicate that Late Wisconsinan ice covered the entire landscape. We measured 81 groove,
striae, and crag and tail sets in the Phillips Quad region during summer 2002 to study topographic effects on ice-flow directions during deglaciation. Striae data were sorted into four size categories, ranging from large grooves to small, inconspicuous striae, and also separated into two geographical categories (either north or south of the Sandy River). In the northern section, rose diagrams show an ESE trend (116° azimuth vector mean) for the largest grooves/striae that formed during ice-flow maximum. Smaller striae show a more easterly flow direction of 102°. In the southern area, grooves and the largest striae have a mean orientation of 133°, more typical of the regional ice-flow direction in this part of Maine. Smaller, less distinct striae indicate ice flow more toward the east (vector mean of 108°, and some striae indicate flow to the ENE). From this data we infer that during the Late Wisconsinan glacial maximum, some ice flowed SE directly over Spruce and Day Mountains. However, Mt. Abraham to the north and Mt. Blue, Spruce Mtn., and Day Mtn. to the south also funneled ice eastward down the east-west- trending Sandy River valley during the glacial maximum. As ice thinned and wasted back, flow was deflected around the mountains. Cross-cutting striae indicate a 47° change in flow direction from SE to ENE on the northeastern flank of Spruce Mtn. Thus, flow indicators record the increasing impact of land-surface topography on ice-flow directions as deglaciation progressed. The smallest striae would have formed beneath active ice that was moving slowly (perhaps at rates of a few meters per year) near the end of the deglaciation sequence.


The Phillips 7.5’ Quadrangle, west-central Maine, is located in the foothills of the Appalachians. The Sandy River flows approximately east-west through the Quad. Striae on the area’s highest points indicate that Late Wisconsinan ice covered the entire landscape. We measured flow indicators in the Phillips Quad to study topographic effects on ice-flow directions during deglaciation. Striae data were sorted into size categories, ranging from large grooves to small, inconspicuous striae, and also separated into two geographical categories (north and south of the Sandy River). In the northern area, rose diagrams show an ESE trend (116° mean) for grooves/striae formed during ice-flow maximum. Younger, smaller striae show a more easterly flow direction (102° mean). In the south, the largest flow indicators have a 133° mean orientation, typical of the west-central Maine’s regional ice-flow direction. Smaller striae indicate more easterly flow (108° mean). From this data we infer that during the Late Wisconsinan glacial maximum, some ice flowed SE directly over highlands, while some was funneled down the Sandy River valley by topographic highs to the north and south. As ice thinned and wasted back, flow was deflected more toward the east by the emerging high-relief topography.

Geoscience relies heavily on the use of sight for gathering data and making interpretations about earth history. Using maps, recognizing landscape features, identifying rocks and minerals, determining rock relations in the field, and sequencing events using cross-sections are primarily visual activities. For a student with a visual impairment this can be frustrating at best. I experienced this firsthand in an introductory-level Geology course. Though willing to adapt the curriculum, the professor lacked resources and knowledge required to do so and research suggests that this may be a trend among science educators. We searched for existing resources on teaching geoscience to students with visual impairments, but found only two articles specific to geoscience and the visually impaired, and a few others that suggested methods that could be adapted for the geoscience curriculum. We found or developed several methods for making lectures, field experiences, homework, and laboratory activities more accessible. Examples of simple accommodations include providing an assistant in the lab and out in the field, using verbally descriptive language in place of visual materials, and providing as many hands-on experiences as possible. A key to accessibility is to make maps and diagrams tactile. This can be done through the use of glue, sandpaper, fabric paint, Wikki Stix and thermoform techniques. Recent advances in computer technology, including embossing printers capable of producing detailed, variable height tactile graphics, could prove to be valuable for geoscience students in the future. Finally, it is important for teachers of geoscience to recognize that there are various levels of visual impairment and that students’ needs differ based on their visual abilities and experiences.

**BRAIDED-STREAM/EOLIAN ENVIRONMENT OF PROTEROZOIC HINCKLEY SANDSTONE, KEWEENAWAN RIFT, EAST-CENTRAL MINNESOTA.** April Johnson, undergraduate student, with Karen Havholm, faculty, same department. 
*Geological Society of America Annual Meeting, Boston, MA, 3-7 Nov. 2001.*

The Proterozoic Hinckley Sandstone, a late-stage Keweenawan rift-fill quartz arenite, was previously interpreted as a shallow lacustrine deposit. We re-interpret this unit as a braided-stream/eolian deposit based on evidence from eight measured partial sections in Pine Co., MN. Three facies are identified. 1) Trough cross-stratified sandstones are predominantly medium-grained, planar beds with multiple troughs up to 2 m. wide and 20 cm. thick, locally containing rounded lithic or angular siltstone pebbles. Trough and cross-strata orientations indicate a SE paleocurrent, and are interpreted to represent sandy braided streams that flowed across the rift axis. 2) Planar cross-stratified sandstones are finer-grained, with predominantly simple sets up to 2 m. thick that typically display mm.-scale laminated tangential foreset/toesets, in places alternating with cm.-scale straight foresets. Locally, basal foresets, toesets and bounding surfaces display climbing adhesion-ripple structures or low ripple-index (<10) ripple-forms; cross-strata consistently dip NE. This facies represents dunes that migrated along the rift axis across dry, damp or flooded stream margins and interfluves. 3) Planar stratified sandstones comprise complexly interbedded sequences (up to 2 m. thick) of crinkly/mottled strata (including climbing adhesion-ripple structures), preserved ripple-forms (symmetrical/asymmetrical, r.i. <10) and mm-scale planar laminae with rare thin (<20 cm.) single sets of cross-strata. These were deposited in interdune or stream-margin environments alternating from dry to damp to wet conditions. 

Soft-sediment deformation is of four types: 1) low-amplitude m.-scale convolute beds, 2) dewatering structures, 3) small (mm.- to cm.-scale) extensional faults, and 4) a flame structure with an overlying structureless zone. Many of these structures can be explained
by migration of dunes over saturated strata. Limited exposure prevents detailed interpretation of fluvial architecture. However, lateral facies changes over a few hundred meters result from stream downcutting into eolian and interdune strata, typical of a shifting braided stream system. No evidence of aridity was discovered; dunes formed easily on the margins of sandy streams in the vegetation-free Proterozoic landscape.

CHARACTERISTICS OF SUBMARINE MASS-FLOW DEPOSITS ADJACENT TO THE NIFTY VOLCANOGENIC MASSIVE SULPHIDE OCCURRENCE, EASTERN BELLA COOLA. April Johnson, undergraduate student, with J. Brian Mahoney, faculty, same department.


LATERAL VARIABILITY IN HEAVY METAL SPECIATION WITHIN LACUSTRINE ENVIRONMENTS, LOWER COEUR D’ALENE RIVER VALLEY, IDAHO. Taryn Lopez and Laura Strumness, undergraduate students, with Robert Hooper and J. Brian Mahoney, faculty, same department.


The lower Coeur d’ Alene (CDA) river valley of northern Idaho has been heavily impacted by lead and zinc contaminants from the CDA mining district upstream. Variation in hydrologic regime, redox conditions, porosity/permeability, organic content and microbial activity results in complicated metal transport pathways. Documentation of these pathways is a prerequisite to effective remediation. A combination of sequential extraction and scanning electron microscopy provides a comprehensive assessment of particulate speciation of heavy metals within the lacustrine environments. This investigation examines the lateral and vertical variability in heavy metal speciation in four lacustrine environments within the CDA River Valley. Lead and zinc are sequestered as authigenic, biogenic and detrital phases; the mechanism of metal sequestration within the lakes varies with distance from source. Near the source, lead occurs as coarse authigenic or fine grained detrital material, and downstream as non-stoichiometric, biogenic material. In contrast, in the lower reaches of the valley, Zn occurs as fine grained detrital and coarse grained authigenic material. Curiously, upstream, Zn is apparently sequestered in biogenic phases. The contrasting contaminant behavior may be the result of hydrodynamic sorting, varying residence times, variations in sediment supply, or biotic differences within the lake systems. Ongoing analysis is designed to test these hypotheses.

GEOARCHAEOLOGICAL INVESTIGATION OF FLUVIAL TERRACES ALONG THE LOWER SOUTH SASKATCHEWAN RIVER, CENTRAL SASKATCHEWAN, CANADA. Carrie Morrell and Nikki Athnos, undergraduate students, with Karen Havholm (primary author), faculty, same department, Garry Running, faculty, Geography and Anthropology, and D. J. Wiseman, Brandon University.


The purpose of this project is to provide archaeologists and geoscientists seeking sites suitable for their investigations with a model of terraces (number, location and stratigraphy) and landscape evolution within the South Saskatchewan River Valley through post-
glacial time. The study reach, from St. Louis, Saskatchewan downstream to the confluence of the North and South Saskatchewan Rivers, is located within the Forks Locality, one of four archaeologically-rich, ecologically complex localities across the Canadian Prairies under investigation by SCAPE (Study of Cultural Adaptations within the Prairie Ecozone). Subsurface investigations at three archaeological sites (cores, cutbank profiles, and radiocarbon analysis) were used to characterize terrace fills and constrain terrace ages. Terrace locations were mapped using aerial photographs. Four terraces (T1-T4) and an active floodplain (T0) were identified within the study reach. T3 and T4, indistinguishable on aerial photographs and mapped together, are cut into till or glaciolacustrine deposits and are graded to terminal late-Pleistocene levels of glacial lakes Saskatchewan and Agassiz. T1 and T2 (<500 to 2000 BP, and <4000 to ~9200 BP respectively) are composed of a silty vertical accretion facies with numerous thin, weakly expressed buried soil profiles over sand and gravel lateral accretion facies. Abandonment of T1 and T2 and subsequent incision resulted from adjustments to local base level changes controlled by glacial Lake Agassiz. Geoarchaeological investigations should focus on T1 and T2 where deeply buried, stratified archaeological sites are to be expected. The four terrace model presented here will be tested with additional subsurface and dGPS elevation data collected in 2003.


Grey, silty, calcareous till of the Pierce and Marathon Formations (deposited >400 ka) is present in western and north-central Wisconsin. These calcareous till units are overlain by pre-Late Wisconsinan, reddish-brown, sandy till of the River Falls and Lincoln Formations. Reddish-brown, sandy Copper Falls Formation till (deposited 25 -12 ka) is found at the surface throughout most of northern Wisconsin. Glacial till samples have been analyzed since 1973 at the UW-Madison Quaternary Geology Lab. These till data (2,300 samples) have been compiled in an Excel spreadsheet and mean till characteristics have been analyzed. A DNR lookup table was used to convert section/township/range location information into Wisconsin Transverse Mercator coordinates. ArcView 8.1 has been used to display till data in visual formats and analyze magnetic susceptibility, grain size, and carbonate content for till lithostratigraphic units in northern Wisconsin. GIS analyses have revealed several trends. Pierce and Marathon till units have similar matrix textures (40:40:20 sand:silt:clay %) but display calcite to dolomite ratios of 4:1 and 0.4:1, respectively. An increase in magnetic susceptibility values for River Falls till from west to east may reflect ice flow lines that crossed banded iron formation units in northern Wisconsin and the Upper Peninsula of Michigan. Lincoln Formation till samples are sandy (55:31:14), but Lincoln till samples in northern Clark and southern Taylor Counties are less sandy (and more silty) than along the eastern, western, and southern boundaries of the till unit. Silty till of the Marathon Formation underlies the Lincoln Formation in northern Clark and southern Taylor Counties, and glacial erosion of Marathon till may have “contaminated” Lincoln till with silt in those areas. Tills of the Merrill and Bakerville Mbrs. of the Lincoln Fm. and the Copper Falls Fm. display anomalously low magnetic susceptibility values in southern Oneida, eastern Lincoln, and western Langlade Counties.
STIMULANT ABUSE AMONG COLLEGE STUDENTS. Melissa Irwin and Kristina Hall, Psychology, undergraduate students, with William Frankenberger, faculty, same department.  

This project uses a questionnaire to (a) examine the extent that prescribed stimulant medication for attention deficit hyperactivity disorder is abused among University of Wisconsin-Eau Claire students (b) gather information on the target effects associated with the abuse of stimulant medication, and the side effects that coincide with use, and (c) assess the participants knowledge of some of the medical aspects of ADHD. Participants consist of 500 males and 500 females randomly sampled from students living on the UW-Eau Claire campus. Through the use of a survey format, the study assesses the abuse of stimulant medication on the UW-Eau Claire campus, and compares and contrasts the results between males and females. These issues are of interest for several reasons. First, more males are being diagnosed with ADHD, therefore having more contact with the stimulant medications. Second, college is getting more competitive as time progresses, a possible interaction between target effects and gender could give more insight into understanding this issue of abuse. Third, abuse issues with medications for ADHD have not been thoroughly examined among college students. Finally, public awareness and understanding the reality of stimulant medications and their abuse is minimal.

ABUSE OF STIMULANT MEDICATION AMONG COLLEGE STUDENTS. Kristina Hall, Psychology, Melissa Irwin, same department, and Krista Bowman, Biology, undergraduate students, with William Frankenberger, faculty, same department.  

The increase in stimulant use is evinced by data from the United States Drug Enforcement Administration (DEA). According to DEA data, there was nearly a 900% increase in methylphenidate (Ritalin) production from 1990 to 2001. Further, from 1993 to 2001 the production of amphetamines (Dexedrine and later Adderall) increased by 5767%. In the face of these prodigious increases, there has been a dearth of research related to abuse of stimulant medications in general and on college campuses in particular. The purpose of this project was to investigate abuse of these medications at a Midwestern university. The project employed a questionnaire to (a) examine the extent to which prescribed stimulant medications for attention deficit/hyperactivity-disorder was abused by university students (b) gather information on the target effects associated with the use of stimulant medication (c) gather information on side effects associated with use of stimulant medication, and (d) assess the participants knowledge of issues associated with ADHD. Results of this study revealed that 16.8% of 179 surveyed males and 10.9% of 202 females reported using prescribed stimulant medication for non-medical purposes. Forty-four percent of surveyed students stated that they knew students who took stimulants for non-medical purposes. Results show that students at the university had knowledge about stimulant abuse and were aware of some side effects associated with the use of stimulant medication.
The St. Croix Band of Lake Superior Chippewa Indians were prominent history-makers in the first half of the nineteenth century. The Band’s leaders were represented at the Treaties of 1837 and 1842, and the Band’s villages and populations were carefully recorded by the U.S. Indian Agent in 1843. In the terrible winter of 1850-51, the Band’s members made the journey to Sandy Lake, Minnesota, at the insistence of the United States, and many perished there in that diseased and starving place. All of this is recorded in documents at UW-Eau Claire. But what happened to the St. Croix Band after 1851? They did not sign the 1854 treaty ceding the North Shore of Lake Superior, and in turn, reserving key lands in Wisconsin for tribal homelands. From 1851 through the 1930s, the St. Croix were known as the “Lost Band” because they did not have a reservation, nor any apparent relations with the United States. This collection of student essays and reproduced historical documents is an attempt to fill in some of the missing past from written sources about the Lost Band between the years 1854-1936. The students worked in consultation with tribal officials of the St. Croix Band and, upon completion, the students presented their research findings to the Band as a gift.

BOSNIA - PEACEKEEPING AND THE AMERICAN SOLDIER. Jeremy Byers, undergraduate student, with Selika Ducksworth-Lawton, faculty, same department.

Increasingly taxing for the United States’ military, peacekeeping operations require sustained troop efforts, unit costs, and ever-evolving technology costs. This project examines the detrimental effects of peacekeeping operations on United States Army, utilizing the experiences of the 2nd Armored Cavalry Regiment’s deployment in Bosnia (1997-1998). The study also demonstrates the difficulties presented by operations under the UN, NATO, and American foreign policy. The study also highlights some of the difficulties (such as retention, degraded ability, declining morale, and force protection) the American Army faces as it struggles to maintain a balance between warfighting tasks and the increasing demands of peacekeeping.

LEGIONS OF STEEL: SMALL UNIT, COMBINED ARMS TACTICS ON THE EASTERN FRONT DURING WORLD WAR TWO. Jeremy Byers, undergraduate student, with Patricia Quinn, faculty, same department.
The Eastern Front played the crucial role in the Allies’ defeat of Germany in World War Two. Combined arms units played the key role in both the offensive and defensive actions of the Russian and the German armies. Combined Arms units evolved from small, loosely-organized groups of men and equipment into strong, well-trained units that were the most capable units either belligerent fielded. This study examines the tactics employed by the combined arms units of the primary combatants in their offensive and defensive roles as they both struggled to overcome their adversary and win the war. The tactics used on the Eastern Front continue to influence United States Army doctrine (via the German experience) sixty years after the end of the war. For their part, the Russians still maintain tactics and doctrine gleaned from their experiences in World War Two and these tactics have found their way (via Soviet equipment and advisers) to countries such as Iraq, China, and North Korea. Thus, understanding the evolution of these strategies and tactics holds contemporary as well as historical significance.

A PULLMAN HELL: WORKING CLASS RELIGION AND LABOR CRISIS, A CASE STUDY. Christopher Cantwell, undergraduate student, with Robert Gough, faculty, same department.

ETHNIC CHURCHES, WORKER CHURCHES: ETHNICITY, CLASS, AND GENDER IN THE MAKING OF WORKING-CLASS CONGREGATIONS. Christopher Cantwell, undergraduate student, with Robert Gough, faculty, same department.

Ever since the seminal work of Herbert Gutman pre-industrial Protestantism’s influence on the American labor movement, the field of working-class religious history has had many ebbs and flows. Several important and penetrating studies have been produced, but few have given a general framework toward understanding the experiences America’s workers with religion. Drawing on the neo-institutionalist movement in the field of Sociology, this presentation seeks to posit a plausible framework towards this goal by viewing worker created congregations as an institution where workers retained their agency in fashioning the local religious culture of their church. By utilizing the largely working-class region of Pullman, Illinois, as a case study, this presentation demonstrates that workers devoted a great deal of time and effort into the establishment of these churches to embed them with their distinct cultural patterns and characteristics. In applying this framework it can be seen that the congregation served pivotal roles in the shaping of the working-class experience by serving as an arena into which pivotal identity issues of gender, class, ethnicity, and race were confronted and resolved. Finally, this presentation explores the distinct experience of America’s ethnic immigrant workers. The need to affirm one’s ethnic identity brought an entirely new dimension to these ethnic churches, and highlights their truly unique character and place in American working-class religious history.

Dr. James Oberly has a manuscript under consideration at the University of Nebraska Press titled “Many Trails of the Mohican Nation: History and Culture.” The book is a collection of essays of scholars and Stockbridge-Munsee (Mohican) Indian tribal members on the 400 years of recorded history and culture of the tribe. This history is well described in the text of the book, but when talking about physical locations, maps are needed to have a complete manuscript to show the “Many Trails” of the Mohicans. Through a faculty-student research collaboration grant involving a history professor, a geography professor, and three undergraduate geography students, maps were created for the text. The maps created were of current locations and past locations, along with the tribal movements around the eastern United States and Canada. The professors provided the necessary data and the students applied their cartographic skills along with the Mohican Nation data to create complete maps of the Mohican movement along with the text from the book containing the history and culture that will end in a final published manuscript.


The Deacons for Defense and Justice in Bogalusa, Louisiana proved the success of armed self-defense as a tactic in 1964. Little is known about them outside of Louisiana. The Deacons in Chicago were involved in organizing urban youth, soliciting funds for education and charity, and spreading their philosophy of armed self-defense. Personnel, philosophy, and equipment linked the Chicago Initiative to the Mississippi. The researchers will investigate the Deacons for Defense and Justice in Chicago and Mississippi. They will help identify existing interviews and look at the newspapers the Chicago Defender, The Louisiana Weekly, Milwaukee Times, Milwaukee Courier, New Orleans Black Data, and Jackson Advocate. Ms. Reid and Mr. Ecker will analyze the newspaper data. The FBI file on the Deacons also yields information for this project. The researchers will look at the philosophical questions on adoption of armed self-defense, and what influence the deacons had on the Black Power movement, along with the Deacons’ relationship to the mainstream civil rights movement. They will focus on Chicago, Milwaukee, and Jackson for this project.

ASSOCIATING PULMONARY FUNCTION WITH SMOKING AND EXERCISE HABITS OF FOUR COLLEGE YEARS. Darren Faherty, undergraduate student, with Don Bredle, faculty, same department. American College of Sports Medicine, Northland Chapter Spring Tutorial Meeting, St. Cloud, MN, 5 April 2002.

Nearly one in five Americans has some form of chronic airway dysfunction. Smoking and lack of exercise contribute to this problem, but it is not clear how early these factors begin to impact lung function. To longitudinally study pulmonary function as it relates to physical activity and smoking habits, beginning with the college years. 402 freshmen entering a midwestern college were recruited from a required wellness course, thus assumed to be representative of their entire class (18.4 ± .6 yrs, 62% female). We conducted electronic pulmonary function testing and surveyed physical activity levels (Baecke questionnaire of work, sport, and leisure categories), smoking history (including second-hand exposure), and pulmonary history. 98 of the subjects were reassessed as seniors, and we expect to follow these subjects longitudinally into adulthood.

Over the 4 college yrs, there was a small but significant (p<.001) increase in vital capacity (.18 L or 3 %), maximal flow rate (0.7 L/s or 7 %), and 12-sec maximal voluntary ventilation (16 L/min or 11 %), while FEV1/FVC decreased slightly (from .87 to .85). Height did not change significantly. Only 12 of the 98 (12 %) admitted to being regular smokers, but 31% had some history of smoking. More students started smoking than quit, but the pattern of changes in pulmonary variables across the 4 yrs was no different for the students who began smoking in college. As a group however, new smokers had lower FEV1/FVC (near .80). The prevalence of asthma decreased from 14% to 12%; 7 of the students ‘grew out’ of their asthma while another 5 students acquired it. Substantial second-hand smoke exposure decreased from 31% to 22% of the subjects. In those subjected to second-hand smoke, vital capacity was the only pulmonary variable that was significantly reduced. There were no significant changes in activity levels over the 4 years. A higher score on the ‘sport’ component of the activity questionnaire was positively, but weakly, correlated with better results on the pulmonary variables, at the beginning as well as at end of college.

The college years present an opportunity for continued growth and strengthening of the pulmonary system, as reflected in an increased VC, MVV, and reduction in asthma. However, the FEV1/FVC suggests the small airway function is already beginning a slight decline. Additionally, lifestyle habits such as smoking and second-hand smoke exposure are beginning to affect the pulmonary function even over these four years. A larger sample size is needed to substantiate the trends seen in this small study. The fact that we were only able to retest 25% of the original subjects raises several questions. Certainly, many of them had left the university, but we speculate that some others may have been reluctant to retest, perhaps concerned that their values would be lower than as freshmen.
ON THE NUMERICAL COMPUTATION OF SOME USEFUL MATRICES.
Stephanie Anderson, undergraduate student, with Shyam Chadha, faculty, same department.
70th Annual Meeting of the MAA WI Section, Ripon, WI, 12-13 April 2002.

In this work we propose to develop a family of square matrices such that (i) $A B = 0$ will have both $A$ and $B$ non-zero matrices; (ii) $A B = I$ will have both $A$ and $B$ as integer matrices. Simple methods for constructing such matrices will be suggested, and some uses of these matrices are discussed. Necessary theorems are stated and proved.

REFREEZING OF EUROPA. Leon Buck, undergraduate student, with Marc Goulet, faculty, same department.
2002 Spring Meeting of the Wisconsin Section of the Mathematical Association of America, Ripon, WI, 12-13 April 2002.

Europa is one of the moons of Jupiter. Due to tidal heating, it is conjectured that underneath the icy surface is a liquid ocean. It is expected that the ice shell experiences occasional melt through events as a result of large impact events, large scale diapirism or even hot plumes from the base of the Europan ocean caused by magmatic eruptions. We model the refreezing of the icy shell following such a melt through event. Our model numerically solves the two-dimensional heat equation in cylindrical coordinates with constant temperature boundary conditions and temperature dependent heat conductivity. The model incorporates a basal heat flow due to the tidal heating of Europa’s core, together with a tidal heating of the ice shell.

PERSISTENCE OF THIN ICE REGIONS IN EUROPA’S ICE CRUST. Leon Buck, undergraduate student, same department, with Chris Chyba, SETI Institute, Marc Goulet and Alex Smith, faculty, same department, and Paul Thomas, faculty, Physics and Astronomy.

Extensive data from planetary spacecraft as well as celestial mechanics models support the existence of a subsurface ocean on Europa ~100 km thick, maintained by a tidal heat flux. Models in which the overlying ice crust is less than 20 km thick permit breaches in the ice due to impact events or thermal plumes from the tidally heated core. We apply a two-dimensional thermal model to the analysis of the refreezing of a hole in the ice crust following a breach event. Our model incorporates heat produced by tidal heating of Europa in two ways: a basal heat flux from Europa’s silicate and iron core, together with volumetric heating of the ice shell. We compare our refreezing timescales to those obtained from a model where viscous flow in the base of the ice crust fills the hole. We find that catastrophic breaches in Europa’s ice crust may produce regions of relatively thin ice persisting up to ~1 My. These breaches are closed by viscous flow when radii are small (<10–50 km) and by conductive refreezing for larger radii, especially if Europa’s crust has a high basal heat flow due to a hot core. Detection of the ice/ocean interface by orbital detection of the temperature anomalies or radar sounding would be most probable in the vicinity of these events.
POISEUILLE’S LAW—SHOWING THAT RHO IS INVERSELY PROPORTIONAL TO R^4 USING THE SHELL METHOD. Rachel Georges, undergraduate student, with John Drost, faculty, same department.

MAA Wisconsin Section Meeting, Wausau, WI, 25-26 April 2003.

MANAGEMENT & MARKETING

THREE MARKET DRIVERS OF THE SUPER BOWL’S GROWING POPULARITY. Patty Traczk, undergraduate student, with Chuck Tomkovick, faculty, same department.


MUSIC & THEATRE ARTS

THE ALEXANDER TECHNIQUE: EFFICIENCY IN HUMAN MOVEMENT/VOCAL QUALITY. Alyson Hudock, undergraduate student, with Toni Poll-Sorensen, faculty, same department.


Current research on the Alexander Technique emphasizes how correct body alignment can improve a person’s movement efficiency. The Alexander Technique is a form of movement reeducation that emphasizes recognizing habitual holding patterns, reevaluating the idea of uprightness, and attending to personal perceptions of tension or stress. The Alexander Technique suggests alternative ways of using one’s body to maximize efficiency through any number of activities. This research project examined the effect of the Alexander Technique on walking efficiency. Four specific parameters of efficiency were measured. We investigated whether lessons in the Alexander Technique would 1) improve blood pressure 2) decrease metabolic cost 3) increase oxygen consumption and 4) decrease heart rate. Our results are leading us to believe that the use of the Alexander Technique can significantly decrease systolic blood pressure (P<0.5) along with decreasing metabolic cost (approximately 5%).

THE APPLICATION OF FRACTAL GEOMETRY TO SOUND SYNTHESIS. Amanda Potts, undergraduate student, with Gary Don, faculty, same department.


This project involves the implementation of an algorithm that generates fractal shapes, such as the Sierpinski Triangle and fern leaves, both as two-dimensional visual graphs and as sound synthesis files. This algorithm is based on a recursive Iterative Function System that employs affine transformations and probability weighting to produce a series of (xy) points, each of which is a transformation of the ,1 preceding (xy) point. The visual implementation uses Maple 6, a program that solves the affine equations and graphs the points on a coordinate axis system. The sonic implementation uses Common Lisp and Csound, which interpret the x axis as time and the y axis as pitch and scales the graph to produce an audible version of the visual fractal shape. Interesting questions arise: can one perceive the
relationship between visual and sonic realizations of the same shape, or are they perceived as unrelated entities, due to the fact that the visual shape is perceived all at once, whereas the sonic shape is realized in time? This project makes possible direct comparisons between visual and aural domains, and opens avenues of investigation that were not previously available.

NATIVE AMERICAN MUSICAL CULTURE IN THE COLLEGE CURRICULUM: BRIDGING TWO WORLDS. Nichole Ray, undergraduate student, with Gretchen Peters, faculty, same department.


The goal of this project was to work toward developing a curriculum that is accurate, culturally appropriate, and meaningful to Native and non-Native Students. While a large body of scholarly literature concerning Native American musical culture exists, much of it is from a non-Native and academic perspective. The project’s goal was to create a curriculum based primarily on personal accounts and Native perspectives. The research was done during the 2002 powwow season. To respect the longstanding oral tradition of native people, the data was collected via interviews with drums (a group of singers/drummers who play together on one drum) dancers, vendors, and spectators. My involvements in the project focused on the inter-dependence of the drums, dancers, their regalia, vendors, and spectators and how each contributes to the powwow circle. In my presentation I will address from an urban Indian perspective how powwows and dancers have evolved while powwow music has for the most part, remained steadfastly unchanged.

WILLIAM ADAM: HIS TEACHINGS, LIFE, AND CAREER. Brian Thorstad, undergraduate student, with Robert Baca, faculty, same department.


Mr. William Adam taught at Indiana University, which is one of the nation’s leading institutions for musical training, for 42 years and is recognized as one of the most prominent trumpet professors and pedagogues in the world. Specific aspects of Mr. Adam’s teachings have been studied in the past. However, our research focused on the development of Mr. Adam’s teaching and playing over his entire career, which the International Trumpet Guild has shown an interest in. Using the ideas of Aikido, Zen, and Yoga, William Adam created a new way of teaching trumpet that combines these techniques with musical expression and the Laws of Physics. Using this method, the student focuses solely on the sound that he/she would like to produce. This repetition of sound, heard either externally or internally, allows the student to over come many of the technical and physical problems that are often associated with playing a musical instrument. This methodology of goal oriented practice is suitable for application in all areas of study.

SNAKES IN NEW ORLEANS VOODOO RITUALS. Larry Troyer, undergraduate student, with Lori Rowlett, faculty, same department.


One of the differences between Voodoo (also spelled Vodun or Voudou) as practiced in New Orleans and Voodoo in Haiti, where it originated, is the extent of emphasis on snakes
in ritual. Snakes are a part of Voodoo mythology wherever it is found, but in New Orleans they are prominent in the ceremonies. According to Voodoo tradition, the creators of the universe at the beginning of time were a pair of serpent spirits, Damballah (the male) and Aida Wedo (the female). From them came the World Egg, out of which came all of creation. The snake tradition comes originally from the Fon people of Western Africa, and differs from some of the other West African creation stories (such as the Yoruba), which typically feature anthropomorphic deities as creators. The Fon connection is obviously a factor, but it would presumably affect both Haitian and Louisiana Voodoo. Research in historical archives in New Orleans this past summer revealed a wealth of early newspaper accounts of Voodoo rituals written for the general public. Although the reporters’ interpretations contained misinformation concerning the meaning of what they observed, one consistent feature described was the snake dance. Is the use of snakes in New Orleans ceremonies a relatively recent emphasis that developed over the last 150 years or so, perhaps because it appeals visually to American practitioners and observers? We suspect so. The connection with the Fon myth seems rather weak in New Orleans. Practitioners generally refer to the snake as “Zombie” rather than Damballah or Aida Wedo. In Haitian Voodoo, the word Zombie is used for something else entirely.

TEACHING NATIVE AMERICAN CULTURE FROM A NON-NATIVE PERSPECTIVE: AN EXERCISE IN HUMILITY. Hannah Zimmer, undergraduate student, with Gretchen Peters, faculty, same department.


This research project began out of the recognition of the difficulties of teaching Native American musical culture as an outsider. The goal of this project was to work toward developing a curriculum that is both accurate and meaningful to Native and non-Native students, with consideration given to curricula in both the public school and college settings. While a large body of scholarly literature concerning Native American musical culture exists, much of it from a non-Native perspective, the goal was to create a curriculum based primarily on personal accounts and perspectives. We chose to attend Ho-Chunk, Ojibwa, Menominee, and Lakota powwows in the western Wisconsin region where we observed powwow culture, conducted personal interviews, and held informal conversations. Some of the questions included the reasons Native Americans attend powwows, etiquette and procedures surrounding powwows, values instilled at powwows, issues of change in powwow culture, education and transmission of powwow music and dance, and gender roles at the powwow. After acquiring accounts and ideas, the challenge of our study shifted to how educators can effectively and practically bring these ideas into the classroom.

PHILOSOPHY & RELIGIOUS STUDIES

ORIGINAL NATURE AND HUMAN NATURE IN TANG DYNASTY
NESTORIAN CHRISTIANITY. Andrew Ruggles, undergraduate student, with Charlene Burns, faculty, same department.


A number of Nestorian (Eastern) Christian texts originating in Tang Dynasty China have been largely ignored despite their potential value to the study of early Christian mis-
sions, the study of medieval Chinese religion, and dialogue between Christianity and Eastern religions. Martin Palmer’s The Jesus Sutras, unique in its accessibility and theological content, touches on one intriguing concept in the texts, “original nature.” He connects original nature with Nestorian Chinese beliefs about human nature and salvation and contrasts this view of humanity with the Augustine’s view of humanity as expressed by the doctrine of original sin. He concludes that original nature is contrary to the idea of original sin and is more comparable to a competing idea, Pelagianism, illustrating a system that is independent of the theology of Augustine. However, his view of the Augustinian/Pelagian debate is profoundly over simplified, and his view of original sin was a patent straw man. Further, in drawing an equivalency between original nature and the Taoist concept of true nature he ignored facets of the Nestorian theology that were more amenable to Augustine. It might be more appropriate to compare original nature with theologies that are independent of original sin such as Eastern Orthodoxy, but its blend of Christian concepts and Eastern terms makes it a very unique theology.

A DEFENSE OF HEGELIAN HOLISM: IN ANSWER TO SOREN KIERKEGAARD AND EMMANUEL LEVINAS. John Timmers, undergraduate student, with Edward Beach faculty, same department.

G. W. F. Hegel’s Absolute Idealism presents a theory of the history of philosophy as a systematic development of Truth. Each successive epoch in the Tradition has presented a formulation of the Truth that improves upon its predecessors while remaining incomplete in itself. Soren Kierkegaard and Emmanuel Levinas’ famous critiques of Hegel have questioned the plausibility of Hegel’s Dialectic on the grounds that it subsumes the individual mind within an ultimately oppressive totality. For Kierkegaard the issue is one of a lack of existential relevance and for Levinas the issue is one of a loss of alterity with regard to the Other. However, both theorists have misunderstood Hegel’s intention in constructing his so-called “totalizing” philosophy, which has led to their unjust criticisms. Hegel’s intention was not to provide a conclusive means of deducing any particular thought nor was it to provide detailed laws that dictate thought. His intention was to show how the Idea develops through the dialectic process. The dialectic process is one of continuous development and enrichment, not oppressive totalizing. Hegel’s system leaves ample room for both the individual mind and alterity.

THE POYNTING VECTOR AND DOUBLE-SLIT INTERFERENCE. Thomas Awe, undergraduate student, with Jin Huang, faculty, same department.

When coherent light is incident upon two parallel, thin slits, the two emerging wavefronts will interfere with one another, creating an ordered pattern of high and low intensity regions. Initial curiosity over this phenomenon lead to the solidification of the wave theory of light. The double slit experiment has many other implications in many fields of physics.
One optical property that can be studied with the double slit experiment is the relationship between the amplitude of the electromagnetic wave, and the detectable intensity of the light. Theory states that the intensity of light is proportional to the amplitude of the Electric Field squared. This can be proven by examining the relationship between the intensity of the interference pattern with the light intensity from the constituent parts. In order to accomplish this, one must block one slit at a time, but due to the close proximity of the slits, the blocking device causes diffractive edge effects, thus compromising the data. It is our effort to limit these edge effects, thus creating experimental data to fully support electromagnetic theory. Also, by utilizing, LabView, in conjunction with appropriate data acquisition devices, we will automate the experiment, thus reducing several forms of error.

**SCANNING TUNNELING MICROSCOPY STUDIES OF CO, FE AND ER ON GAAS. Seth King, undergraduate student, with Matthew Evans, faculty, same department.**


Interfacial reactions between metals, such as Co and Fe, and GaAs have been studied over the years by x-ray photoelectron spectroscopy (XPS), reflective high-energy electron diffraction (RHEED) and scanning tunneling microscopy (STM). These studies have included reaction studies, where the temperature dependence of the reaction is studied, and coverage studies, where different amounts of metals are deposited onto the surface of the substrate, and the structure of the overlying metal is studied. Our study is a continuation of these efforts and will concentrate on the first 40 monolayers (ML) of material, gaining insight into the interfacial region between the magnetic overlayer (Co, Fe) and the underlying semiconductor (GaAs). These layers have become very important in the formation of tunneling barriers between ferromagnetic thin films and semiconductors. The barriers are critical to select the type of tunneling occurring across their structure and the threshold for turning quantum tunneling on and off. The performance of such magnetic heterostructures, or spintronic devices, depends critically on the properties of the interface layer between the magnetic/nonmagnetic thin films and the substrate. Our studies will show the dependence of temperature and coverage on the CoGaAs interlayer formation, focusing on the intermixing that occurs with growth.

**A COMPARISON OF NUMERICAL AND EXPERIMENTAL DATA FOR MELTING ICE. Seth King, undergraduate student, with Paul Thomas, faculty, same department.**


Numerical models of phase transitions have been widely used in the study of geophysical processes (e.g. solidification of lava flows and dikes). We use a two-dimensional finite element code designed to model the freezing process on Europa, a satellite of Jupiter believed to maintain a thin, icy crust over a tidally heated ocean. To apply the numerical model to experimental data, a 10 cm radius cylinder of clear ice, 6 cm thick, initially at 10 C is submerged in warm circulating water at 26 C. As the ice melts, digital images are taken and profiles extracted from these images. The resulting data is compared with the numerical model.
CAPITALISM IN THE CLASSROOM: CONSUMERIST ATTITUDES AMONG COLLEGE STUDENTS. Matthew Breitzmann and William Mac Millan, undergraduate students, with Geoff Peterson, faculty, same department. 

Consumerism is pervasive in the American culture. Inspired in part by Max Weber’s critique of American capitalism and the Protestant work ethic, we conducted a pilot internet survey to explore the extent of consumerism among college students. We found that the data in the survey did not demonstrate conclusively that students are any more “consumerist” in their reasons for obtaining a higher education degree as compared to other aesthetic motivations. The public policy ramifications are important as the widely held consumerist beliefs continue to hold sway over academic institutions.

AMERICAN (UN)EXCEPTIONALISM: A RE-ASSESSMENT OF SEYMOUR MARTIN LIPSET. Allyson Clark, undergraduate student, with Geoff Peterson, faculty, same department. 

Like many theorists of American exceptionalism, Seymour Martin Lipset makes several claims about Americans and how they relate to foreign affairs in his book American Exceptionalism: A Double-Edged Sword. We believe that Lipset’s views are far too limited to be considered correct in all assumptions. While we respect his opinions and believe in the effects that Protestantism has on the American society, Lipset fails to consider too many factors in his assumptions. In particular, we are interested in the impact of geographic isolation on opinions about public policy. We believe that much of the evidence used to support the concept of American exceptionalism is, in fact, simply evidence of the impact of geography. Most Americans can function in society without ever contacting foreign cultures. In contrast, most residents of the European Union could never hope to function without interacting with residents of other nations and issues of cross-national relevance. We contend that a large part of the so-called American exceptionalism is, in fact, large-nation exceptionalism. Using data from the World Values Surveys, we will examine the impact of geographic proximity to other nations, the occupational demands to interact with foreign cultures, and other standard demographic variables on opinions about foreign policy. We expect to find the geography, not an inherent “Americanism,” explains many of these apparent differences.

TOO FAR TO THE BOTTOM? EXPLORING THE PHENOMENON OF VOTER ROLLOFF. Allyson Clark, undergraduate student, with Geoff Peterson, faculty, same department. 
Southern Political Science Association, Savannah, GA, 6-9 Nov. 2002.

Voter roll-off has been the subject of a variety of studies over the years. We argue that one possible explanation is the level of electoral competition for the higher races on the ballot. Using precinct-level voting data, we find that when voter turnout increases for statewide races, voter roll-off increases at the lower levels of the ballot. We also find that the presence of a significant third-party candidate increases roll-off, as does the relative margin
of victory for candidates at several levels on the ballot. We posit that increasing roll-off as a result of increasing turnout is a result of less informed or less interested voters going to the polls to vote in the “big” races while leaving the lower-level races blank. We also believe the evidence shows that voters are less likely to finish a ballot if the outcome of the race is certain or near-certain.


We examined the content of the monologues for the three most popular late-night talk show hosts (Letterman, Leno, and Conan O’Brien) to see what political information was presented to the audience. We found that the vast majority of the humor was negative and targeted at the character of the candidates. There was an amazing lack of information about any of the substantive issues in the campaign with the exception of the death penalty. We also found that only one of the three hosts showed a consistent bias towards one party, while the other two remained ideologically neutral. Overall, the results indicate that the average late-night viewer would be likely to be uninformed and generally negative given the information provided by the three hosts.


The massive growth of the gaming industry on American Indian reservations has been remarkable both in terms of the speed of the growth and the substantial impact on tribal politics. We examined the impact of tribal gaming on voter turnout from 1984 through 2000. Controlling for most of the standard demographic explanations of voter turnout, we find that the presence of a casino in a reservation county increased turnout by 9.5% above and beyond the increase in per capita income created by the casino.

**WHO REALLY ELECTED JESSE VENTURA? AN APPLICATION OF ECOLOGICAL REGRESSION TECHNIQUES.** Glory Koloen, undergraduate student, with Geoff Peterson, faculty, same department. *Southwest Political Science Association Conference, New Orleans, LA, 28-30 March 2002.*

While there has been much speculation about the election of Governor Jesse Ventura in 1998, little scholarly effort has been put forth to determine who the Ventura voters were. Using the ecological inference techniques developed by Gary King (1997), we examined the impact of several demographic variables on the likelihood of voting for Ventura in 1998 using county-level data and using King’s EI methodology for ecological inference. The evidence indicates that at least some of the anecdotal speculation about the makeup of Ventura supporters was incorrect, although the limitations of the data and significant problems with the EI methodology itself make it difficult to reach firm conclusions.

This paper examined the shifts in public opinion towards gay men and lesbians in the United States from the early 1980s to late 1990s. The gay community, like many other oppressed groups, has struggled for equality and acceptance for decades. Using data from the American National Election Studies starting in 1984 (the year the gay/lesbian feeling thermometer was added), we examined the changes in public opinion towards gay men and lesbians. The ANES data showed that general acceptance for gays and lesbians has certainly improved over time, although white males continued to be the least acceptant of all of the demographic groups examined.

BEYOND REALISM: COMPLEX INTERDEPENDENCE AND POSTINTERNATIONALISM IN WILLIAM GIBSON’S NEUROMANCER SERIES. Rafael Murphy, undergraduate student, with Patricia Quinn, faculty, McNair Program. Science Fiction Research Association, New Lamark, Scotland, 28 June - 1 July 2002.

Both political scientists and science fiction authors generate and contemplate models of states’ primary interactions. They analyze the purposes and bases of states’ existence, and they question the relationship of the individual to the state. Often, the academics and the authors share a parallel vision. Just as Realism dominated the policy thinking of twentieth-century academics (as well as generals, politicians, and common citizens), so too do the future worlds of Heinlein, Herbert, Miller, Clarke, Orwell, and the creators of the Star Trek continuity operate according to systems reminiscent of the Cold War. But, by 1991, the Cold War (and the Soviet Union) ended. In the decade before that, William Gibson introduced from the fringes of science fiction a future that accommodated a thoroughly globalized world. His Neuromancer series presents a world beyond Realism, one where Postinternationalism and Complex Interdependence explain the actions of power players, of economic forces, and of the diminished role of states.


Using the World Values Survey structure, this research effort is to survey 110-150 older Hmong who came to the U.S. after the Vietnam War, and 100-150 Hmong who were either born in the U.S. or immigrated as young children. The study examines political and social value differences between older and younger Hmong cohorts in four American communities: Eau Claire, La Crosse, and Oshkosh in Wisconsin, and Minneapolis-St.Paul in Minnesota. Utilizing Inglehart’s work as a point of departure (Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies: 1997), this survey will be a tool used to determine degrees of intergenerational value changes. Inglehart contends the process of modernization in advanced industrial societies created economic and physical security. Gradually shifting from a concern with material/modern values to postmaterial/postmodern values such as prioritizing of leisure time, environmental issues,
women’s rights, and more tolerant attitudes toward ethnic and sexual minorities. This paper suggests pre-existing postmaterial/postmodern value priorities, especially the environment, that are attributed to younger cohorts in postindustrial societies can also be observed in premodern/preindustrial traditional societies in which older Hmong cohorts spent their formative years, but the degree is less marked than the value shift observed in industrialized societies.

BOTH ENDS AGAINST THE MIDDLE: PUSHES FOR REGIONAL AUTONOMY ABOVE AND BELOW THE STATE LEVEL IN EUROPE. Lance Leonhard and William Mac Millan, undergraduate students, with Geoff Peterson, faculty, same department.  


This research focuses on the relationships that minority ethnic groups have to the political and social institutions of the majority culture in European states, and the way supranational organizations affect those relationships. Modern Europe is both altering its current nature, and ossifying its structure in many radical ways. Different cultures, in an era of globalization, are seeking to keep their cultural definition. Part of the solution they seek is political autonomy within a larger political unit. While this sub-national drama is being played out, supranational organizations, specifically the European Union and the United Nations, help the minority cultures achieve some level of self-rule, while also reinforcing the current, state-centric international system. Using the Euro-barometer, an international political and demographic survey, cultural analysis, and examinations of international political institutions, this research focuses on solutions to political questions of autonomy for specific minority ethnic groups. Included, as case studies, are the Basques of Spain, and the island of Corsica’s relationship to the French state.

PSYCHOLOGY

PIGEONS, LIKE HUMANS, WILL NOT RELIABLY OBSERVE INFORMATIVE STIMULI: IMPLICATIONS FOR THE MATCHING LAW. James Anderson and Mikhail Koffarnus, undergraduate students, with Gregory Madden, faculty, same department.  

Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.

This is a follow-up to the project published by Dr. Madden in 1999. In that study, we found that humans were unwilling to respond to produce informative stimuli that would allow them to earn more money in experimental sessions. This was an important finding because it helped to explain why humans typically do not conform to Herrnstein’s (1970) matching law (the quantitative model of animal choice behavior that enjoys more empirical support than any competing model). The present experiment will examine whether animals (pigeons) will observe these stimuli under comparable conditions. Thus, across five phases, animals will be able to respond to each food from two concurrently available food sources. If they do not respond to observe the informative stimuli, they will be unable to discriminate that one food source pays off more frequently than the other. If they do observe these stimuli, they may learn to discriminate that one food source is richer than the other. Twelve pigeons will participate. Each will be exposed to daily sessions in which they earn their food rations Five phases are scheduled. Each phase is anticipated to take 30-50 sessions to complete.
Assessing child preferences to identify potential reinforcers has recently become an important area of research within applied behavior analysis. Preference assessments are conducted to determine what activities or foods are most preferred by an individual. The results from preference assessments suggest reinforcers that can be used to teach new skills (e.g., verbal communication). Several types of assessments have been researched as possible ways to identify individual preferences. For example, a paired-stimulus assessment requires the individual to choose between two items and all items are paired with each other. The multiple-stimulus assessment requires an individual to choose from the entire array of items while the duration of time spent with each item is recorded. The purpose of this study was to compare these two preference assessments in determining a reinforcer. The second purpose of the study was to measure whether the results from the preference assessments accurately predicted engagement with the items (toys) when the items were available in a free play period at school.

Individual preferences of toys were assessed for young typical children. The preference assessments resulted in a hierarchy of most-to-least preferred toys. Following the preference assessments, engagement with the same toys was assessed in natural play settings. The results suggest the predictability of preference assessments on engagement in natural settings.

A correlational study examines the relationship between social support and anxiety. Previous research has implied a connection between these two variables but there are issues concerning accurate measures. Particularly, perceived rather than received social support needs to be measured, and anxiety measures need to assess state as well as trait anxiety. Social support measures operate on assumptions; if the number of supportive individuals is measured, it is assumed that quality of adjustment correlates with the quantity of supportive individuals. A more precise measure of social support would examine the component functions of social support rather than its effects based on assumptions. One hundred seventy-six university students completed the Social Provisions Scale (Cutrona & Russell, 1987) which evaluates perceived social support using six provisions of social relationships. Concerning the variable of anxiety, the state- trait distinction is important be-
cause while states are changeable, traits are stable. Therefore, participants completed the Beck Anxiety Inventory (BAI) (Beck, 1990), which measures this distinction. Expected results are that higher scores on the Social Provisions Scale will be associated with lower scores on the BAI. In other words, it is predicted that individuals who perceive higher provisions of social support will experience lower levels of anxiety.

THE INFLUENCE OF CAPTION AND PICTURE RELEVANCE ON THE BIZARRE IMAGERY EFFECT. Roury Boerner and Mark Bune, undergraduate students, with Blaine Peden, faculty, same department. 

Bizarre sentences and their mental imagery have been found to enhance memory recall, known as the bizarre imagery effect (BIE). Past research has indicated that the BIE is sensitive to various conditions. Two conditions that have not been extensively examined within BIE research are the use of actual pictorial images and the relevance of a picture’s caption. Therefore, our study used captions (relevant or irrelevant) paired with pictures (normal or bizarre) to analyze the BIE. We hypothesized that when the picture’s caption is relevant, the BIE occurs; but when the caption is irrelevant, the BIE does not occur due to its complex conditions. Thirty-three college students participated in a cued recall exercise using a 3 (caption type) x 2 (image type) mixed subjects design. Related captions were recalled more completely than unrelated captions supporting our hypothesis. However, the captions of bizarre images were not recalled more than those of normal images; therefore, no BIE was present. This suggests further research involving the effects of caption relevance and actual pictures in obtaining the BIE.

HUMAN SOCIAL BEHAVIOR UNDER CONCURRENT SCHEDULES; CONGER & KILLEEN REVISTED (VRB; DATABASED PRESENTATION). Jeffrey Bordenave and Luke Klein, undergraduate students, with Gregory Madden, faculty, same department. 

Conger and Killeen (1974) examined human verbal behavior in a context of concurrent social reinforcement. Several problems with their methods and a failure to replicate their findings by Pierce, et al. (1981) led us to systematically replicate this study. Our subjects were to speak to two computers that were supposedly remotely connected to two linguistics professors at other universities. The computers delivered praise statements contingent upon looking in the direction of the computer according to independent VI schedules. Initial data indicates that subjects were sensitive to these contingencies. Reliability was verified by videotaping the sessions and assessing inter-rater reliability between two independent raters.

MOTIVATION AND RETENTION OF INFORMATION: THE USE OF POWERPOINT VERSUS STATIONARY TRANSPARENCIES. Stephanie Buchholtz, undergraduate student, with Lori Bica, faculty, same department. 
Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

This study investigated the level of motivation and retention of information associated with using different teaching techniques. It was hypothesized that PowerPoint will create
higher motivation for learning and greater retention of information. Participants included 200 students of various ages, class standings, and majors from UW-Eau Claire. Participants were involved in a presentation on neural communication. An audiotape was used to deliver the content of the presentation to ensure that all participants received the same information. The researcher used PowerPoint to accompany the audiotape for 100 participants and stationary transparencies projected on an overhead for 100 participants. All participants were offered the opportunity to take notes on the presentation. Following the presentation, participants completed a motivation measure and a test on the presentation content. Participants were asked to provide their email address if they wanted their test results. It was hypothesized that PowerPoint will create higher motivation for learning as evidenced by length and accuracy of note taking, higher scores on the motivation measure, and choosing to provide an email address. Greater retention of information will be measured by participants’ scores on the content test. Analysis of variance will be used to investigate group differences.

THE EFFECTS OF GHRELIN, AGRP, AND NPY ON FOOD-REINFORCED BEHAVIOR. Charles Burns, Doug Flashinski, Johanna Johnson, Jim Lenio, Kimberly Masters, Sarah Lonsdale, Ilia Hillert, Mikhail Koffarnus, and Constance Cameron, undergraduate students, with David Jewett, faculty, same department. 


Ghrelin, agouti-related peptide (AgRP), and neuropeptide Y (NPY) reliably increase eating in rats. However, possible food-motivating effects (e.g., increases in lever pressing) induced by ghrelin and AgRP are undetermined, to date. The present research assesses the ability of these agents to alter behavior maintained under operant reinforcement schedules in an attempt to understand behavioral and pharmacological mechanisms related to feeding. This research is of significance and clinical importance for several reasons. First, ghrelin, AgRP, and NPY induce increases in eating. Second, ghrelin, AgRP, and NPY are found together in the hypothalamus, a brain area known to be important for feeding regulation. Third, NPY increases behavior maintained under several operant schedules of food reinforcement. For these reasons, it is likely that ghrelin and AgRP will also increase food motivation. This experimental paradigm provides a quantitative measure of food motivation in rats through progressive ratio, fixed ratio, and discrimination experiments. This research may allow the identification of pharmacological and/or behavioral treatments that reduce not only eating behavior, but also food motivation and a desire to eat.

A REVIEW OF THE TARGET BEHAVIORS IN PUBLISHED RESEARCH FOR PERSONS WITH AUTISM. Constance Cameron, undergraduate student, with Kevin Klatt, faculty, same department.

Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.

A review of the autism literature was conducted to investigate variables from studies pertaining to autism. The review was completed to determine the areas most and least researched in autism. The variables investigated include participant ages, target behaviors, and settings. Results suggest most research in autism has been with adolescents in controlled settings focusing on communication skills.

THE BEHAVIORAL ECONOMICS OF RELATIVE REINFORCER EFFICACY. Jared Choate, undergraduate student, with Gregory Madden, faculty, same department.

Traditional measures of relative reinforcer efficacy (i.e., progressive-ratio breakpoint, peak response rate, and preference) do not always demonstrate that one reinforcer type is consistently more effective than another. Bickel and Madden (1999) provided such data in human cigarette smokers and argued that behavioral economic measures (e.g., intensity and elasticity of demand) may provide a more complete picture. The present experiment further tests this hypothesis by examining pigeon’s food consumption under single FR and RR schedules. Intensity and elasticity of demand measures derived from these data were then employed to determine which reinforcer would be more effective at a range of unit prices. These predictions were then tested under concurrent FR RR schedules. Data collected thus far, support the behavioral economic predictions. Time permitting, we will examine our ability to use behavioral economic measures to determine which reinforcer will have a higher progressive-ratio breakpoint.

GENDER COMPARISONS IN ATHLETE PORTRAYAL DURING THE OLYMPICS. Kelly Clark, undergraduate student, with Allen Keniston, faculty, same department.
Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

The first page of Midwestern newspaper’s Olympic Games section was analyzed for gender differences in number and prominence of articles, and number and portrayal of photographs. The hypotheses that coverage would favor male athletes were not supported. Findings suggest that progress toward comparable coverage of Olympic athletes has been made.

UNIVERSITY OF WISCONSIN-EOU CLAIRE SUMMER AUTISM PROGRAM. Kimberly Clausen, Kristen Hattamer, Thor Flosason, Carla Lagorio, Ellie Mauel, and Beth Schwenker, undergraduate students, with Kevin Klatt, faculty, same department.
Poster presentation at the Mid-American Association for Behavior Analysis, Kalamazoo, MI, 4-5 October, 2002.

An overview of the newly founded University of Wisconsin-Eau Claire Campus Autism Program is provided. The Campus Autism Program provides behavioral intervention to children with a recent diagnosis of autism. Undergraduate students complete language assessments and write behavioral programs to address needs of individual children. In addition, students conduct research projects as part of the clinic.

ASSESSMENT OF A SEXUAL ASSAULT PREVENTION PILOT PROGRAM. Alexis Dorsey, Sena La Pean, Krista Steinmetz, Tamara Plath, Mark Bune, Zachary Wedge, and Tony Schaffer, undergraduate students, with Marie Crothers and Lori Bica, faculty, same department.

A pilot program was designed to incorporate effective elements/recommendations from existing literature. Six residence hall wings (three female/three male) were selected for the program group (N=63). Six similar wings comprised the comparison group (N=79). Par-
Participants were given a pre-test to determine previous sexual experiences and behaviors that might be linked to sexual assault. The program group then participated in three prevention sessions, each lasting two hours. Some portions of the program were delivered to women and men together, and other portions were presented separately. Participants will be tested twice a year for a period of four years. The focus of this presentation will be a comparison (ANOVA) of the two groups at the first fall post-test. The researchers hypothesize that rates of victimization/perpetration since the pre-test (Koss and Oros’s Sexual Experiences Scale) will be significantly lower for program participants. Also, the use of risk reduction behaviors is hypothesized to be significantly higher for program participants. An outcome measure was developed specifically for use in this study to investigate the extent to which participants used the risk reduction behaviors learned in the program. The design of this measure will be discussed. Participants’ evaluative comments about program design will also be summarized.

EVALUATION OF A SEXUAL ASSAULT PREVENTION PROGRAM. Alexis Dorsey, Tamara Plath, Sena La Pean, Mark Bune, and Krista Steinmetz, undergraduate students, with Marie Crothers and Lori Bica, faculty, same department. Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

A sexual assault prevention program was designed based on existing literature to target male and female university students during their first four weeks on campus. This psychoeducational program was delivered in three weekly, two-hour sessions. Outcomes will be evaluated longitudinally using a behaviorally-based measure designed and piloted in this study.

BEHAVIORALLY RATING SHELTER DOGS TO IMPROVE ADOPTABILITY. Molly Ferron, undergraduate student, with Gregory Madden, faculty, same department. Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.

The purpose of this study was to rate the Eau Claire County Humane Society’s shelter dogs’ behavior through precise behavioral assessment. Dogs often come to the shelter with little known about their behavior, and are then returned due to adopters’ lack of knowledge about them. The behavior of the dogs was observed and assessed according to common desirable and undesirable behaviors potential adopters might consider. A behavioral rating scale was formed to list and display the behaviors of each dog on its cage. The list was constructed through various methods: direct observation, research on previous studies, and discussion with shelter employees. The rating scale allows potential adopters access to accurate information regarding the dogs’ qualities. The effectiveness of the test was evaluated by comparing the return rate before and after the rating scale was made, along with continuous modification as the project moved along. The assessments involved applying basic behavioral principles to the testing and rating of the dogs’ behaviors.

IS THIS THE RIGHT DOG FOR YOU? TARGETING AND TRAINING OF DESIRABLE BEHAVIORS IN SHELTER DOGS. Molly Ferron, undergraduate student, with Gregory Madden, faculty, same department. Association for Behavior Analysis Annual Convention, San Francisco, CA, 23-26 May 2003.

MOCK JURORS’ PERCEPTIONS OF SCHIZOPHRENIA, DEPRESSION, AND THE INSANITY DEFENSE AS MITIGATING FACTORS IN MURDER TRIALS.
Capital sentencing jurors are instructed to treat mental illness and insanity pleas as mitigating factors in murder trials. Little research has investigated mental illness as a mitigating factor and most findings have actually suggested mental illness may be an aggravating factor (Slobogin, 2000). Furthermore, most research has revealed that pleading insanity is an aggravating factor (Finkel, Burke, & Chavez, 2000). While Schizophrenia has been researched as a mitigating factor in capital murder trials, no parallel studies have been conducted regarding Depression. The present study measured verdict selections and attitudes toward Schizophrenia and Depression, each with and without an insanity plea. Four court cases were developed. Each court case was identical except for which mental disorder the defendant had (Schizophrenia vs. Depression) and the defendants plea [Not guilty vs. Not Guilty by Reason of Insanity (NGRI)]. Participants (mock jurors) were primarily college students from a midwestern university and were asked to complete a web survey on a university website. Each participant read one of four randomly assigned vignettes, selected a verdict: (a) Guilty, (b) NGRI, or (c) Not Guilty, and answered a questionnaire regarding insanity defense attitudes (if applicable). Defendants with Schizophrenia and defendants pleading NGRI were more likely to receive a verdict of guilty than defendants with Depression and defendants pleading not guilty. This study helps describe mock jurors’ perceptions of defendants with mental disorders and is the first analysis of Depression. With ongoing concern about the usefulness of the insanity defense and the NGRI verdict, results from this study help clarify the usefulness of the insanity plea.


Ghrelin, agouti-related peptide (AgRP), and neuropeptide Y (NPY) reliably increase eating in rats. However, possible food-motivating effects (e.g., increases in lever pressing) induced by ghrelin and AgRP are undetermined, to date. The present research assesses the ability of these agents to alter behavior maintained under operant reinforcement schedules in an attempt to understand behavioral and pharmacological mechanisms related to feeding. This research is of significance and clinical importance for several reasons. First, ghrelin, AgRP, and NPY induce increases in eating. Second, ghrelin, AgRP, and NPY are found together in the hypothalamus, a brain area known to be important for feeding regulation. Third, NPY increases behavior maintained under several operant schedules of food reinforcement. For these reasons, it is likely that ghrelin and AgRP will also increase food motivation. This experimental paradigm provides a quantitative measure of food motiva-
tion in rats through progressive ratio, fixed ratio, and discrimination experiments. This research may allow the identification of pharmacological and/or behavioral treatments that reduce not only eating behavior, but also food motivation and a desire to eat.


The APA Monitor on Psychology (July/August, 2000) addressed issues regarding therapy and research on the Internet. Birnbaum (2001) indicates that the number of psychological studies on the Internet doubled from 1998 to 1999. To date conference presentations (e.g., a session at the 2000 MPA meeting) and publications (Birnbaum, 2000; 2001) have focused on how to do psychology studies on the Internet and how the results obtained in laboratory studies compare with the results obtained in Internet studies; however, no one has empirically examined the variety of ethical dilemmas confronting Internet researchers. The present study will report a content analysis of Internet web sites for surveys, personality tests, and experiments. The goal is to describe and analyze the extent to which these Internet researchers comply with ethical principles for research. The study will show whether the instances of noncompliance are distributed equally over variables such as the type of research or the individuals doing the research.


Problem: Previous studies have included effects of and reactions to pornography, but have not addressed how common people think pornographic consumption is, and whether or not one would permit their partner to be a consumer of pornography. Procedure: 500 heterosexual students will participate in this study. Participants’ own use of pornographic material and whether they think that use is appropriate will be examined. The participants will also estimate the percentage of the opposite sex that utilizes pornography, and whether or not it is appropriate for a partner to utilize pornography. Independent variables are gender and length of longest relationship. Results: Males will have a higher use of pornographic material than females. The male estimate for female consumption will be lower than the females’ for male consumption. Males will indicate appropriateness for themselves to utilize pornography, but not their partners. Females will indicate inappropriateness for both themselves and partners. People with longer relationships will differ in expectation from those new to dating. Conclusions: This study will determine if expectations people hold regarding pornography consumption are realistic, and that those expectations vary with gender. Also, length of time involved with a partner modifies one’s expectations, which has implications for future relationship research.

RELATIONSHIP EXPECTATIONS IN THE UTILIZATION OF PORNOGRAPHIC MATERIAL. Rebecca Gardner, undergraduate student, with Allen Keniston, faculty, same department. Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.
Men and women have held different views about many things, including relationship roles and expectations. Is it realistic to expect one’s significant other to never be associated with any pornographic material? What can affect these expectations? The researcher will administer a survey that asks participants what they expect from their significant other, or potential significant other, when dealing with the utilization of pornographic material. It will be assumed that most people find violent and child pornography inappropriate, so questions will not address either of these types of pornography. Also, gender and length of longest relationship will be requested. It is expected that males will have a high percentage of pornographic exposure, while females will report a suspected low percentage of pornographic exposure for males. Females will have a lower percentage of pornographic exposure, but males will report a lower yet suspected percentage of pornographic exposure for females. Males will find their utilization of pornographic material appropriate, but will not want their significant other to be associated with any material. Females will expect their partners not to be associated with pornographic material appropriate, but the high percentage of male association will show that the expectation is not realistic.


This study determined what role dating plays in high school students’ happiness. Previous studies have shown that marriages and friendships increase happiness because partners have a communication partner (Myers, 1999). Relationships also improve mental well-being by enabling the partners to better handle stress (Bee, 1996). High school relationships are different because they are usually less serious and more social. For example, students confront the pressure of dating for social acceptance. We devised a survey to test our hypothesis that dating students would be happier. Our second hypothesis was that good communication within current relationships would increase happiness. Lastly, we thought that males would be happier than females, overall. One hundred thirty-five students completed a 38-question survey containing two established measures of happiness and two established relationship satisfaction scales. Results showed that dating students scored significantly higher on each of the happiness questions than the non-dating students. Surprisingly, those dating students who reported good communication within their current relationship did not have higher overall happiness scores. A significant sex difference was not present.


The Ideal Free Distribution (IFD) is a quantitative model of group foraging that bears a formal resemblance to Herrnstein’s (1970) matching law. The model holds that members of a foraging group will distribute their members between two patches in a proportion that matches the proportion of reinforcers obtained in those patches. In the present study, two experiments were conducted. The first experiment demonstrated that increased group size diminished sensitivity to differences in reinforcement rates across the resource sites. Observations suggested that many participants were primarily interested in extra credit, and extra credit was noncontingent upon behavior during the session. The second experiment
was conducted to test the hypothesis that sensitivity to the scheduled contingencies can be improved by increasing reinforcing efficacy. This experiment delivered extra credit contingent upon choices made. Those who foraged well earned the most amount of credit possible, and those who did not forage well earned few extra credit points.

AN ANALYSIS OF THE RESEARCH SETTING IN THE BEHAVIORAL LITERATURE. Betsy Hallam and Roxy Wolf, undergraduate students, with Kevin Klatt, faculty, same department. Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.

A review of literature pertaining to behavior analysis was conducted to determine the settings where applied research is conducted. Studies were reviewed with respect to whether they were conducted in analog or natural settings. Results indicate that applied settings have gradually changed from natural to analog settings across the past 30 years.


Many neurochemicals have been shown to increase eating in rats, however, few agents are effective in increasing both food intake and food motivation (as measured by an increase in lever pressing to obtain food). Ghrelin and agouti-related peptide (AgRP) recently have been shown to be among the most effective feeding-inducing chemicals yet discovered. Little is known, however, about possible food-motivation effects of these agents. The present research focuses on behavioral and pharmacological mechanisms related to food motivation. This research is of significance and clinical importance for several reasons. First, ghrelin, AgRP, and neuropeptide Y (NPY) effectively increase eating when food is freely available. Second, ghrelin, AgRP, and NPY are co-localized in many brain areas (including the hypothalamus, a brain area known to be important for feeding regulation), and third NPY markedly increases food motivation. For these reasons it is likely that ghrelin and AgRP will also increase food motivation. This experimental paradigm provides a quantitative measure of food motivation. This research may allow the identification of pharmacological and/or behavioral treatments that reduce not only eating behavior, but also food motivation and a desire to eat.


Research has found that people use flirtation to attract members of the opposite sex. Research also indicates that these behaviors have an effect on relationship initiation. This project explored the effects of nonverbal and verbal flirtation on the perception of romantic interest. The hypotheses for the present research were that the presence of nonverbal flirtation would increase the perception of romantic interest, that the presence of verbal flirtation would increase the perception of romantic interest, and that the interaction between nonverbal and verbal flirtation would increase the perception of romantic interest. The
present research defined nonverbal flirtation as hair grooming, body grooming, and leaning toward or touching the other person. Verbal flirtation was characterized as personal compliments, sexual innuendos, and pick-up lines. This project employed a 2 (presence vs. absence of nonverbal flirtation) X 2 (presence vs. absence of verbal flirtation) between-subjects factorial design and used researcher-created surveys and video vignettes. Results indicated that there were main effects of nonverbal and verbal flirtation on perception of romantic interest, but there was no interaction between the two independent variables. These results indicate that people recognize flirtatious cues as indicators of romantic interest.

OBSERVING IN PIGEONS UNDER CONCURRENT SCHEDULES OF REINFORCEMENT. Daniel Hehli, undergraduate student, with Gregory Madden, faculty, same department.


Twelve pigeons responded under concurrent VI VI schedules. In one condition, distinct schedule-correlated stimuli (colors) were presented to the response keys as is typical in the operant literature. In the other condition, the birds were required to make an observing response to obtain brief access to these stimuli. In the first condition, subjects generally conformed to Herrnstein’s matching law. In the second condition, sensitivity to the schedule contingencies was systematically related to the frequency of observing behavior. Observing behavior, when optional, occurred at very low rates in most sessions.

CROSSED-UNIVERSITY COLLABORATION. Nicole Johnston and Molly Wulf, undergraduate students, with Allen Keniston, faculty, same department.

Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

DO UNDERGRADUATES UNDERSTAND ETHICAL BOUNDARIES? Anna King and Julie Mojsiej, undergraduate students, with Blaine Peden, faculty, same department.


Previous research examining actual ethical knowledge of undergraduate students who had and had not completed an ethics course found that students who had taken a prior ethics course obtained higher scores of actual ethical knowledge. In addition, several researchers believe students who work in human service positions need to possess a complete understanding of the variety of moral principles involved in a professional code of ethics. In order to determine the preparedness of undergraduates entering helping professions, the present researchers will study 180 freshman and senior-level Psychology, Social Work, and Nursing majors. Through the use of a multiple-choice questionnaire, the researchers will gather participants’ factual knowledge of ethical boundaries. Vignettes will also be used to collect the applied knowledge of the participants. The researchers will then compare factual and applied knowledge between the three majors. Additionally, factual and applied knowledge will be compared between freshman and senior-level undergraduates. The researchers expect that Psychology majors, both freshman and senior-level, will possess a lesser ethical understanding than the other two levels of Social Work and Nursing majors. Also, the researchers anticipate no difference of ethical understanding between freshman and senior-level psychology undergraduates.
THE EFFECTS OF DEPRIVATION AND SATIATION ON PREFERENCES OF TYPICAL CHILDREN. Mikhail Koffarnus, Katie Solberg, and Cassie Welch, with Kevin Klatt, faculty same department.
Poster presentation at the Mid-American Association for Behavior Analysis, Kalamazoo, MI, 4-5 October, 2002.

Research has recently been conducted investigating variables that affect individual preferences. The purpose of this study was to investigate the effects of deprivation and satiation on preferences of toys for typically developing children. Toy preferences were assessed using a paired-choice format in deprivation, satiation, and control conditions. Results showed preferences were affected by both deprivation and satiation.

DIFFERENCES IN HOW COLLEGE STUDENTS VIEW CHEATING WHETHER IT IS ONLINE OR OFF. Karin Koenig, undergraduate student, with Blaine Peden, faculty, same department.

This study examines how college students view infidelity in real-life and in cyberspace. Although there is minimal research about cybersex regarding perceptions of infidelity online, numerous studies of being unfaithful have shown that many people feel differently about cheating that entails an emotional attachment versus meaningless sex. Our experiment employed a 2 (Real-life Scenario vs. Internet Scenario) x 2 (male participant vs. female participant) between subjects design and ratings of emotional attachment cheating and sexual intercourse cheating. The results of the ANOVA revealed a statistically significant main effect, such that participants taking the Internet Survey were not as likely to rate the sexual intercourse question as cheating as much as the participants taking the Real-life Survey. However, there were no gender differences in scores on either dependent variable. Our results show that both male and female college students feel that sexual intercourse is cheating in a real-life scenario but are not as definite about it being cheating in an internet scenario. We anticipate further studies will examine sexual activity via the Internet because approximately 20 percent of all Internet users engage in some kind of online sexual activity (Liebert, n.d.).

DIFFERENCES IN HOW COLLEGE STUDENTS VIEW CHEATING WHETHER IT IS ONLINE OR OFF. Karin Koenig and Alyssa Moore, undergraduate students, with Allen Keniston, faculty, same department.
Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

PROBLEM/MAJOR PURPOSE: This study examines how college students view cheating or infidelity in real-life and in cyberspace. Although there is minimal research about cybersex or on perceptions of infidelity online, numerous studies of being unfaithful to your partner have shown that many people feel differently about cheating that entails an emotional attachment versus meaningless sex. This topic has practical significance because 23 percent of the U. S. husbands and 12 percent of U. S. wives have reported having had sex with someone else other than their spouse (Knox, Zusman, Kaluzny & Sturdivant, 2000). Our experiment employed a 2 (Real-life Scenario vs. Internet Scenario) x 2 (male participant vs. female participant) between subjects design and ratings of emotional attachment cheating and sexual intercourse cheating. PROCEDURE: We block randomized on the basis of the sex of the participants to make two different study groups. Subsequently,
one group was given a real-life scenario and the other group was given an Internet scenario in two different rooms. After the researchers read the study instructions verbatim and collected the consent forms, the participants then completed a demographic survey, read the scenario and made their ratings. The researcher then collected the surveys and debriefed the participants in order to ensure that ethical standards were being met according to the APA standards reported by Shaughnessy, Zechmeister, and Zechmeister (2000). RESULTS: The results revealed a statistically significant main effect, such that participants taking the Internet Survey were not as likely to rate the sexual intercourse question as cheating as much as the participants taking the real-life Survey.

THE EFFECTS OF DEPRIVATION AND SATIATION ON PREFERENCES FOR TOYS FOR TYPICAL CHILDREN. Mikhail Koffarnus and Katie Solberg, undergraduate students, with Kevin Klatt, faculty, same department.

Researchers have recently conducted studies investigating variables that affect individual preferences. One area of research has investigated the effects of deprivation and satiation on preferences (Gottchalk, Libby, & Graff, 2000; Klatt, Sherman, & Sheldon, 2000). Previous research has demonstrated that individual preferences are heavily influenced by the amount of time since the individual last consumed the particular item. Research has yet to be conducted on the effects of deprivation and satiation on nonfood items, on high and low preference items, or by comparing typically developing children with children diagnosed with a developmental disability. This study will be conducted by assessing high and low preferred toys for typically developing children. This will be done by using a forced-choice procedure whereby children are given two items and asked which they would like to play with. The preference assessments will be conducted after a period of time in which the child has not had an item (deprivation) and immediately following a period of time when the child had played with the item.

PREFERENCE BETWEEN EQUIVALENT UNIT-PRICED ALTERNATIVES. Carla Lagorio and Julie Slowiak, undergraduate students, with Gregory Madden, faculty, same department.

According to Consumer Demand Theory (Samuelson and Nordhaus, 1985), unit price determines consumption regardless of its cost and benefit components. The theory also holds that an individual should prefer the lower priced alternative, and ample evidence supports this. In addition, Consumer Demand Theory predicts no preference between equal unit-priced alternatives when all else is considered equal. This theory was considered and studied by using four white canneaux pigeons as subjects. In the experiment, pigeons obtained food after choosing between two equivalent unit-priced alternatives. Like previous human research, their preference for the smaller (less effortful) reinforcer increased as unit price increased, however, unlike humans, the pigeons were indifferent at low unit prices. Due to further examination of this fact, a handling cost was added to the cost of obtaining the food reinforcer, which by default produced unequal unit prices. Our further examination of the handling cost’s effect on the pigeon’s behavior is needed to draw any conclusions about our research.
EFFECTS OF HANDLING COSTS ON PIGEON’S PREFERENCES BETWEEN EQUIVALENT UNIT PRICES. Carla Lagorio and Julie Slowiak, undergraduate students, with Gregory Madden, faculty, same department. 

This is a systematic replication of the study conducted with human cigarette smokers by Madden, Bickel, & Jacobs (2000). Pigeons were given choices between two reinforcers available at the same unit price (response requirement/reinforcer magnitude) but with different reinforcer amounts (and corresponding response requirements). Like humans, pigeons tended to prefer the relatively smaller reinforcer (with its corresponding smaller response requirement) as the unit price of both alternatives increased. At low unit prices, pigeons were indifferent (as predicted by behavioral economics), while humans preferred the larger reinforcer at comparable prices. When a handling cost inherent in the human procedures was added to the pigeon study, the bird’s preferences mirrored those of humans.

‘TREATMENT AND PERCEPTION OF CRIMINALS’ AND THE SSRRG ONE. Sena La Pean, Angela Hill, and Chad Wiechert, undergraduate students, with Blaine Peden and Lori Bica, faculty, same department. 
Midwest Psychological Conference, Chicago, IL, 8-10 May 2003.

We investigated the effect of media slant (positive or negative) and criminal remorse (absent or present) on criminal perception and punishment levels. Sixty participants read a negatively or positively slanted vignette with a remorseful or unremorseful criminal. Questions followed regarding perception of the criminal and desired punishment levels.

INFLUENCE OF MOVIES AND COLLEGE MAJOR ON VIEWS OF TOURETTE’S SYNDROME. Cassie Lubich and Laura Carter, undergraduate students, with Lori Bica, faculty, same department. 

The differences in views of Tourette’s Syndrome in college students who had watched either a comedic movie featuring Tourette’s Syndrome or an unrelated movie were investigated. The effects of college major were also examined. The dependent variables were the perceived seriousness of the disorder and perceived frequency of motor tics. The independent variables were college major and type of movie shown. It was hypothesized that because the comedic movie presented an inaccurate depiction of Tourette’s, participants would judge seriousness incorrectly. It was also hypothesized that participants whose major may include coursework in mental disorders (psychology/pre-medicine/nursing) would judge Tourette’s more accurately than all other majors. A 2 x 2 between-subjects ANOVA examined group differences. No significant interaction was found. There was one significant main effect: college major on perceived frequency of symptoms (F=9.64, p<.05). Participants in psychology/pre-medicine/nursing (M=3.80) were significantly more likely than those in the other/undeclared major (M=2.68) to accurately estimate that motor tics are necessary to be diagnosed with Tourette’s Syndrome. Findings suggest that short exposure to the media does not significantly alter perceptions of a mental disorder. In addition, college major can have an important effect on views of mental disorders.
EATING DISORDERS ON CAMPUS: INCIDENCE RATES AND CORRELATES. Kimberly Masters, Melissa Marsh, Sarah Lonsdale, and Molly Hanson, undergraduate students, with Allen Keniston, faculty, same department, and P. J. Kennedy, faculty, Counseling Services.


The incidence rate and correlates of eating disorders on a university campus were investigated. A random sample of 2,000 female undergraduate students (H" 32%) were asked to complete a web survey containing the Eating Attitudes Test (EAT-26) and a brief demographic questionnaire. Data was automatically and anonymously coded in a database. The results of this study were used to assess the prevalence of abnormal eating behaviors and attitudes, provide a baseline to evaluate future prevention programs, and assess the reliability of the EAT-26 for the student population. In addition, correlation between EAT-26 score, body mass index, and demographic variables allowed researchers to identify high-risk populations in order to develop secondary, rather than primary, prevention programs which have proved more effective. Our findings will be used to inform students and their families, faculty, staff, and the surrounding community to the problem of eating disorders. Findings will supplement the few previous studies done with female college students and precede similar studies on other campuses.

THE EFFECTS THAT DEPRIVATION/SATIATION AND PREFERENCES HAVE ON TEACHING CHILDREN WITH AUTISM TO MAND. Ellie Mauel, undergraduate student, with Kevin Klatt, faculty, same department.


One of the core deficits of autistic disorder is a pronounced delay in communication skills. Approximately half of children diagnosed with autism do not acquire verbal skills. Perhaps, then, the most important skill to teach children with autism is functional language. One type of functional language is manding, using language to obtain what one wants. Different environmental events may effect how quickly the child learns how to mand. Whether a child is deprived (has little access to an item) or satiated (has a lot of access to an item) may affect learning to mand. Furthermore, whether an item is high preferred or low preferred may also affect learning to mand. This study assesses how both deprivation/satiation and preferences effect learning to mand for a child with autism.

USING PERCENTILE SCHEDULES TO TEACH SELF-CONTROL TO CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER. Ellie Mauel, undergraduate student, with Gregory Madden and Kevin Klatt, faculty, same department.


Many children are currently diagnosed with attention deficit hyperactivity disorder (ADHD). One important component of ADHD is impulsivity, which has been defined as choosing the smaller immediate reinforcer over the larger delayed reinforcer (self-control). One way of teaching people, who are impulsive, self-control is to provide both the small reinforcer and large reinforcer immediately and then slowly increase the delay between the
choice and the larger reinforcer (Mazur & Logue, 1978). There are no guidelines about how fast and at what increments the delay should increase in order to get the most effective results. Applying percentile schedules (Galbicka, 1994) to teaching self-control, may provide a systematic way to increase the delay. Percentile schedules are based on the person’s history of waiting for the larger reinforcer and would inform researcher when to and how much to increase the delay. Furthermore, percentile schedules would inform researchers what amount of time the delay should be decreased when the delay has been increased too fast. In this our first attempt with percentile schedules we are teaching children diagnosed with ADHD to wait longer periods to receive larger tangible rewards. Data were recorded by a computer so reliability is assured.

USING PERCENTILE SCHEDULES TO TEACH SELF-CONTROL TO CHILDREN WITH ATTENTION DEFICIT DISORDER. Ellie Mauel, undergraduate student, with Gregory Madden, faculty, same department.

Association for Behavior Analysis Annual Convention, San Francisco, CA, 22-27 May 2003.

Many children are currently diagnosed with attention deficit hyperactivity disorder (ADHD). One important component of ADHD is impulsivity, which has been defined as choosing the smaller immediate reinforcer over the larger delayed reinforcer (self-control). This study used percentile schedules (Galbicka, 1994) to teach self-control to three participants with ADHD. These participants had to wait longer periods in order to receive larger tangible rewards. All participants showed an increase in self-control under percentile schedules. A reversal was conducted with one participant, but his waiting periods did not return to baseline levels. Due to time constraints a reversal was not done with the other two participants. While percentile schedules seemed to teach self-control, the variable was not manipulated in enough conditions to conclude that percentile schedules caused this change in behavior.

EFFECT OF REFUTATIONAL TEACHING ON COLLEGE STUDENTS’ ENDORSEMENTS OF A RAPE MYTH. Catherine Micale, undergraduate student, with Lori Bica, faculty, same department.


The study investigated whether refutational teaching (RT) is an effective technique for changing a rape myth (N=234 college students). RT involves activating naive conceptions, then directing people to attend to ideas that contradict their own. Participants responded to the Rape Myth Acceptance Scale; specifically, women falsely reporting rape for attention was the focus. Participants included: 1) control group- neutral reading, 2) rape facts only group- reading contained facts about victims’ unwillingness to report, 3) refutational group- reading challenged participants’ false claims and included facts about victims’ unwillingness to report. Hypotheses: (I) females will endorse the myth significantly less than males, (II) the refutational group will endorse the myth significantly less than other groups. A t-test investigated gender differences in myth endorsement. A 2(gender) x 3(group) x 2(time) repeated measures ANOVA was conducted, with repeated measures on the time variable. No significant differences in female/male myth endorsement were found. Significant differences emerged between the refutational group (M=2.92) and both the control (M=3.42) and rape facts only (M=3.56) groups in terms of myth endorsement. Findings have implica-
tions for sexual assault prevention programs. Presenting general information about rape myths is insufficient in changing beliefs. Myths must be activated and challenged.

**PERCEPTIONS OF MARITAL NAME CHOICES: SEX DIFFERENCES OR SIMILARITIES. Jessica Pinch and Tesa Zimmerman, undergraduate students, with Blaine Peden, faculty, same department.**


Marriage traditionally results in a name change for the female partner (e.g., woman replaces surname with man’s); even though other name change options (e.g., woman retains surname or man alters surname) are available to both partners. This study examines how female and male college students perceive female and male marriage partners who take various non-traditional name choices. Each of the approximately 200 college students will provide Semantic Differential ratings of personality traits (Dion, 1987) on vignettes describing men/women who have taken a non-traditional/traditional name change. A 2 (male vs. female participant) x 2 (male vs. female marriage partner) x 9 (alternative marriage names) between-subjects ANOVA will be utilized to analyze the trait ratings. It is hypothesized that men will rate women with non-traditional name changes negatively (e.g., less intelligent, less dominant) while both sexes will rate men with non-traditional name changes negatively. Practical reasons for further research regarding name choice options at the time of marriage may be a growing awareness among young adults about marital name choices and professionals will increasingly confront these issues in interactions with clients. The practical objective of my proposed research is to sensitize both participants and future professionals to issues pertinent to matrimonial stability.

**ASSESSING THE ADEQUACY OF OUR METHODS: REAL VERSUS HYPOTHETICAL REINFORCERS. Bethany Raiff, Jamie Dake, Ashley Wegener, and Jeffrey Bordenave, undergraduate students, with Gregory Madden, faculty, same department.**


**HUMAN CONCURRENT SCHEDULE PERFORMANCE IN POSITIVE VERSUS NEGATIVE SCHEDULES OF REINFORCEMENT. Bethany Raiff and Ashley Wegener, undergraduate students, with Gregory Madden, faculty, same department.**

*Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.*

Herrnstein’s (1970) matching law is the quantitative model of choice which enjoys the most empirical support in the animal learning literature. Although much research has been conducted to determine if the matching law also predicts the behavior of humans, the current state of the literature is unresolved. The present study builds upon prior studies by Dr. Madden and by others in the published literature. We will examine human behavior in a two-choice situation in which participants work for money during 2.5 hour session (positive reinforcement condition) or work to avoid losing money (negative reinforcement condition). We anticipate that humans will better conform with the matching law in the negative reinforcement condition because prior studies have shown that humans are more sensitive to loses than gains.
UNDERGRADUATE RESEARCH. Julie Slowiak, undergraduate student, with Allen Keniston, faculty, same department.


EXTRAVERSION, PERCEIVED STRESS, COPING, AND SOCIAL SUPPORT NETWORKS IN COLLEGE STUDENTS. Julie Slowiak, undergraduate student, with Marie Crothers, faculty, same department.


This project will extend the work of Brisette, Carver, and Scheier (2002) that examined the role of optimism in the development of social support networks, coping, and psychological adjustment of college students. This study will examine extraversion rather than optimism. Research by Amirkhan, Risinger and Swickert (1995) showed support for the relationship between extraversion and optimism, suggesting extraversion may be related to coping and social support in a similar way as optimism. This project seeks to answer three questions. One is whether a relationship exists between extraversion as the central variable and coping, social support, and perceived stress, respectively. Another is whether extraversion versus other personality characteristics associates with different coping resources for stress. A final question is whether there is a relationship between coping resources and social support networks. One hundred twenty first-year undergraduate students at UW-Eau Claire will be recruited to participate. Each will be given a questionnaire packet containing a demographic survey, the Myers-Briggs Type Indicator Form M, Perceived Stress Scale, Coping Resources Inventory, and Social Support Questionnaire. Data analyses will be computed using SPSS. Descriptive statistics on all scales will be calculated, along with Pearson’s r correlations to assess significance of personality differences among dependent variables.

ANIMAL PREFERENCES BETWEEN EQUIVALENT UNIT PRICES. James Soldner, undergraduate student, with Gregory Madden, faculty, same department.

Association of Behavior Analysis, Toronto, Canada, 24-27 May 2002.

THINGS YOU SHOULD NOT HAVE TO BE TOLD ABOUT YOUR PROFESSION. Paul Thomas, undergraduate student, with William Woody, faculty, same department.


ACTION CONCEPTS AS A BASIS FOR OBJECT ORGANIZATION AMONG TYPICAL VERSUS COGNITIVELY DISABLED CHILDREN. Melissa Waldo, undergraduate student, with J. Todd Stephens, faculty, Special Education, and Allen Keniston, faculty, same department.


While there is a large literature about developmental and differential abilities to use perceptual and semantic properties of words to group objects, relatively less is known about the use of action concepts to organize information and objects. However, recent theoretical work suggests that knowledge of how people come to use action concepts in understanding their worlds is important to understanding aspects of semantic development in both typical and cognitively disabled individuals. To test hypotheses about the progression of abilities to use action concepts to group objects, we had adults, typical children, and cognitively...
disabled children group arrays of objects in a dynamic display that could be organized by a figural characteristic (outline), how they are moving, or their function. Our principal findings are that adults prefer to use function as an organizational basis, whereas both types of children prefer figural characteristics. However, typical children show a developing preference for function over movement groupings, whereas cognitively disabled children do not. This pattern of findings is significant in what it indicates about normal and deficient conceptual development among typical versus cognitively disabled children.

**HUMANS IN LARGE GROUPS VIOLATE THE IDEAL FREE DISTRIBUTION.** Ashley Wegener, Julie Schaller, Luke Klein, and Carla Arnold, undergraduate students, with Gregory Madden, faculty, same department.


**DELAY DISCOUNTING OF REAL AND HYPOTHETICAL REWARDS: NEW DATA AND LINGERING CONCERNS.** Ashley Wegener, Bethany Raiff, and James Soldner, undergraduate students, with Gregory Madden, faculty, same department.


**HUMAN GROUP FORAGING AND THE IDEAL FREE DISTRIBUTION.** Tetsuo Yamaguchi, undergraduate student, same department, with Gregory Madden and Blaine Peden, faculty, same department.


Ideal free distribution theory predicts that foragers will form groups proportional in number to the resources available in alternative resource sites or patches, a phenomenon termed habitat matching. Three experiments tested this prediction with college students in discrete-trial simulations and a free-operant simulation. Sensitivity to differences in programmed reinforcement rates was quantified by using the sensitivity parameter of the generalized matching law \( \gamma \). The first experiment, replicating prior published experiments, produced a greater degree of undermatching for the initial choice \( \gamma = 0.59 \) compared to final choices \( \gamma = 0.86 \). The second experiment, which extended prior findings by allowing only one choice per trial, produced comparable undermatching \( \gamma = 0.82 \). The third experiment used free-operant procedures more typical of laboratory studies of habitat matching with other species and produced the most undermatching \( \gamma = 0.71 \). The results of these experiments replicated previous results with human groups, supported predictions of the ideal free distribution, and suggested that undermatching represents a systematic deviation from the ideal free distribution. These results are consistent with a melioration account of individual behavior as the basis for group choice.

**MARITAL NAME CHOICE: LEGALITY VERSUS DESIRABILITY.** Tesa Zimmerman and Jessica Pinch, undergraduate students, with Blaine Peden, faculty, same department.


A woman or man has several options regarding what surname to take upon marriage or
after divorce (nine to be exact). The decision may be based on their perceived legality and how socially desirable each option is. American Culture of late considers non-traditional options to be less desirable (Scheuble & Johnson, 1993). The purpose of this study is to assess the legal knowledge and society’s attitude towards different name options. Each of the participants will provide Likert Scale ratings of perceived interpretations of the Law and social desirability of vignettes describing both sexes who have taken a non-traditional/traditional name change. A 2 (male vs. female participant) x 2 (marriage vs. divorce) x 2 (non-traditional vs. traditional) between-subjects ANOVA will be utilized to analyze the ratings. It is hypothesized that men will view their legal ability to change their name and their desirability to do so more negatively than women, and it will be less socially desirable for women to possess a non-traditional name. A practical reason for this study is to determine if society and the perception of Law hinders Americans from selecting a non-traditional name choice at the time of marriage or after divorce.

**SOCIAL WORK**

**ANALYSIS OF CLIENT SATISFACTION WITH THE HUMAN DEVELOPMENT CENTER IN RELATION TO RECOMMENDATION FOLLOW THROUGH.** Susan Benner and Jamie Patnode, undergraduate students, with LaVonne Cornell-Swanson and Richard Ryberg, faculty, same department. 4th Annual UW-System Symposium for Undergraduate Research and Creative Activity—Poster Presentation. Eau Claire, WI. 29 April 2003. P086.

The Human Development Center (HDC) is a University of Wisconsin-Eau Claire sponsored agency that evaluates people of all ages in the areas of reading, learning, communication, and developmental delays, as well as emotional, behavioral, familial, and social functioning issues. A study conducted by Conderman and Crawford (1996) reported a high level of client satisfaction with the HDC; however, there are currently no formal measures evaluating client satisfaction on a continual basis. The purpose of this study is to determine client satisfaction in relation to recommendation follow through. It is our hypothesis that a higher level of satisfaction will be reported by clients who have followed through with recommendations made by the HDC team versus clients who have not, as measured by the Client Satisfaction Questionnaire (CSQ-8). The authors conducting this research have also included additional questions to determine how many recommendations were utilized. The results of this study will benefit the HDC in determining the correlation between client satisfaction and recommendation follow through. Pending results, this may be a tool the HDC can use in the future to continually evaluate practice and work toward increasing client satisfaction.

**UNIVERSITY STUDENTS’ RESPONSES TO SEPTEMBER 11TH TERROIST ATTACKS AND CAMPUS DEATHS.** Julia Bobbe, Andrea Boh, and Rebecca Oppenheim, undergraduate students, with Gloria Fennell, faculty, same department, Marie Crothers, faculty, Psychology, Katherine Schneider, faculty, Counseling Services, and Winifred Morse, faculty, Adult Health Nursing. 4th Annual UW-System Symposium for Undergraduate Research and Creative Activity—Poster Presentation. Eau Claire, WI. 29 April 2003. P087.

Researchers investigated UW-Eau Claire students’ responses, both immediate and current, to September 11th, student deaths, and personal losses, along with coping strategies
used, and perceptions of the university services offered. Two thousand randomly selected students received an e-mail survey. 413 usable e-mail surveys were completed and 19 in-person interviews were conducted. Participants were over 70% female upperclassmen. Losses having the greatest impact were 9/11 (55%), unspecified personal loss (15%), and loss of a family member (11%). Immediately after the event, students experienced feelings that the event was not real. While females felt more horror and helplessness, males experienced poor concentration and detachment. Students reported a decrease in intensity of their reactions over time, but concluded that some feelings would continue through life. According to qualitative and quantitative data, the most common coping strategies used immediately after the event were watching the news and talking with others. Often students found university services to be available and helpful, especially news releases, religious services, and class discussion. Students generally thought the university dealt with events properly, but desired more discussions with faculty and friends. Overall, many students felt the event had changed them in both positive and negative ways.


The influx of information technology has created change in all aspects of society. For the nonprofit agency sector, the growing convergence of information delivery systems (e.g., broadcasting, computers, telephones, video) is making one of the primary roles of nonprofits, the role of information provider, a critical role that could lead to general improvements in the quality of life. However, nonprofit organizations, foundations, and local community groups have not kept pace with other sectors of society and face the growing danger of being on the wrong side of the digital divide. This research project was designed to determine the nature and extent of a digital divide among the nonprofit agencies in Wisconsin’s Chippewa Valley. A comprehensive information technology survey to assess information technology utilization and integration was sent to 35 nonprofit social service agencies. This comprehensive assessment went beyond a simple count and assessment of hardware and software to include other critical components such as; readiness of nonprofit staff to integrate technology, presence of initial and ongoing staff training and development, and the presence and adequacy of long-range plans for information technology use. The results may be used to maintain or enhance adequate information technology systems in nonprofit agencies.


The flow of information in today’s society is rapidly increasing. Technology such as computers, telephones, videos, and broadcasting are uniting to increase the ease and availability of information for businesses. However, nonprofit agencies, foundations, and local community groups face the danger of a growing digital divide, and fall further behind in
Center of Excellence for Faculty & Undergraduate Student Research Collaboration

terms of technology acquisition and integration. Nonprofit agencies may hesitate integrating technology due to lack of time and money. However, the potential benefits of making investments in technology are huge. Nonprofit agencies that integrate technology can enhance their service delivery system, responsiveness, and funding capabilities, among other resources. Many organizations have been founded with the purpose of supporting nonprofit agencies attempting to integrate technology. This project seeks to determine the level of technology integration among United Way nonprofit agencies in the Chippewa Valley. The primary use of the data will determine if a digital divide exists among nonprofit agencies, and assess the exact nature of that divide. It also anticipates that the data will spark efforts to increase the level of information technology integration within the survey agencies and ultimately have a positive impact on the quality of life for the communities served.

**Sociology**


Heavy metal has been a cultural phenomenon since the late 70s and, unlike many other popular trends, this subculture has continued to exist, and even grow (Weinstein 2000). This research examines the connections between heavy metal music, the performance setting, and the values of the subculture in an ethnomusicological examination of the culture and its participants. Data was gathered using covert participant observation, in which the researcher was an active performer in a heavy metal band, and participated in the events of the subculture. Heavy metal, despite its posturing to the opposite, is highly reflective of mainstream societal values as shown in many facets of the music, and in the practices surrounding the music. Participants in the heavy metal subculture act in a way that emphasizes traditional gender roles and values. Heavy metal constitutes a form of rebellion that allows it followers to dress and act differently, yet still remain congruent to mainstream values.


This research tests a sociological theory of reputation by applying it to the generation and maintenance of reputation in a local heavy metal subculture. Gary Allen Fine’s theory draws on elements of social exchange theory, symbolic interactionist theory, and theories of economics to develop a wide ranging theory of reputation where interpersonal communication (aka gossip) is the primary mechanism (Fine, 1996, 1977; Rosenow and Fine 1976). By investigating how personal and professional reputations are formed, changed and maintained, the central claims of Fine’s theory are tested. Additionally, through qualitative research employing participant observation methods, the structure of the local “scene” is described. Given that heavy metal music is currently marginalized, investigation reveals how participants maintain positive individual identities as members of the stigmatized group,
and how the group continues to function in light of external disinterest and ridicule (Hayden 1996).

WHAT SHOULD I DO? HELPING BEHAVIOR IN INTERNET COMMUNITIES. Amanda Tompkins, undergraduate student, with Jeff Erger, faculty, same department. Midwest Sociological Society Annual Meeting, Milwaukee, WI, 4-7 April 2002.

This research looks at the values and orientations of members of the rave subculture, both in physical world communities and on the Internet. By analyzing data from print sources and Internet message boards, similarity and differences in values are noted. The rave community espouses certain values including tolerance and diversity. However, Internet postings show far more disagreement with these values than print sources. The reasons for these differences may be due to the anonymity of the Internet, or because a different subpopulation is making use of these outlets. Further research to investigate the causes of this difference is proposed.

RAVE CULTURE AND IDENTITY: STRUGGLING WITH DOMINANT DISCOURSE IN REAL WORLD AND INTERNET COMMUNITIES. Amanda Tompkins, undergraduate student, with Donald Nielsen, faculty, same department. Midwest Sociological Society Annual Meetings, Chicago, IL, 16-19 April 2003.

This paper will discuss the culture surrounding raves and those involved in this subculture – DJs, promoters, graphic designers, and most importantly for this paper: the ravers themselves. The issue of drugs and the rave scene will be briefly discussed as this is important namely because of the negative media exposure that rave culture has gotten in recent years due to drugs. The identity of a raver – exactly what a raver is, what the ramifications are for claiming this identity, and namely, the politics surrounding this identity and culture, along with the community aspect of raves, will be the main focus in the literature review. A mantra of many ravers, PLUR (Peace, Love, Unity, and Respect) will be relevant throughout the paper, so it is suggested that the reader keep this idea in mind throughout. A method of qualitative research looks at the intersections between rave communities in the real world and rave communities online and finds interesting differences between the literature and the data.

GRADUATE STUDENTS

Biology


The lycophyte genus Selaginella has been the subject of several taxonomic treatments in the past one hundred and fifty years. While most have considered megaspore morphology to some extent, no one has successfully reconciled this feature with a comprehensive phylogeny of the group. Recent molecular phylogenies generated using rbcL, ITS and 26S rDNA along with electron microscopy of the megaspores now afford the opportunity to do
so, at least in part. Granules of sporopollenin on the innermost exospore surface are found in all members of the monophyletic subgenus *Tetragonostachys* and its sister taxon *S. lepidophylla*. *Tetragonostachys* includes approx. forty drought adapted species of worldwide distribution. So far, this feature has been found in thirteen species, and no where else within the genus. A highly ordered colloidal crystal-like exospore structure is found only within an as yet unnamed, well supported clade, which includes the monophyletic *Articulatae*. All examined members of the *Articulatae* have this feature. The species that possess this wall structure do not appear to form a monophyletic group, but the number of reversals and/or parallelisms involved is uncertain because of some weakly supported nodes. The species of *Selaginella* now known to possess this unusual structure throughout their exospore are: *S. articulata*, *S. diffusa*, *S. exaltata*, *S. galeottii*, *S. kraussiana*, *S. kunzeana*, *S. lingulata*, *S. lyalii*, *S. marginata*, *S. myosurus*, *S. polymorpha*, *S. remotifolia*, *S. sericea*, *S. silvestris*, *S. suavis*, *S. sulcata*, *S. pygmaea* and *S. willdenovii* show this pattern in places. A final emerging correlation involves the possession of a coarse complete reticulum with high muri by most members of this unnamed clade. The ability to recognize megaspores with particular ultrastructural features of phylogenetic significance without the use of the EM (i.e., by correlation with surface features) would allow the incorporation of dates from fossil material in the analysis.

**BUTTERFLIES AS MEASURES OF SUCCESS OF NATIVE PLANTINGS ON THE CONSERVATION RESERVE PROGRAM LANDS.** Matt Lloyd, graduate student, with Paula Kleintjes, faculty, same department. *Annual Meeting of the Ecological Society of America, Madison, WI, Aug. 2001.*

We used butterflies as indicators for assessing habitat quality of native versus traditional planting of Conservation Reserve Program (CRP) parcels. In 1997, the Natural Resources Conservation Service (NRCS-USDA) in Eau Claire County, WI, began offering cost-share incentives to landowners willing to plant native species on their CRP property. In addition to reducing soil erosion, it was assumed that these native plantings would improve habitat quality for wildlife compared to traditional CRP plantings. To test this assumption, we assessed butterfly species richness and abundance using a modified Pollard-Yates census technique on twenty randomly selected parcels. Abundance and composition of vegetation was also measured. The sites (0.8ha-3.38 ha) included four planted with a traditional species mix in 1998 and four in 1999, four planted with a native species mix in 1998 and four in 1999 and four prairie remnants. As predicted we found the greatest number of butterflies and species on native planted sites, with the highest numbers recorded in August (17spp/837 butterflies). Traditional sites supported slightly fewer species and half the number of butterflies as did native sites. The greatest number of species per total counted (10spp/26 butterflies) was on remnants in June and the remnants also contained the most species unique to the site. Abundance of butterflies was positively associated with abundance and richness of flowering forbs on the native planted sites, especially in August when mature plants provided nectar for adult butterflies.

**CADHERIN ADHESION COMPLEXES ARE A TARGET OF EPHA4 ACTIVITY.** Jaime Malcore, graduate student, with Jon Scales, faculty, same department. *Society for Developmental Biology, 60th Annual Meeting, Seattle, WA, July 2001.*

Lakeshore vegetation often contains a diverse mixture of both true wetland species (e.g., Carex vulpinoides, Eupatorium maculatum) and wet-mesic prairie species (e.g., Andropogon gerardii, Aster novae-angliae), but it has widely been destroyed through development. We have begun to test the efficacy of several restoration treatments in a demonstration area in Lake Wissota State Park, Chippewa County, WI. The site was a lawn dominated by Kentucky bluegrass. We used three methods of site preparation: (1) black plastic plus mulch, (2) rodeo plus rototilling, and (3) control. These were crossed with three methods of revegetation: (a) the addition of seedling plants in plug form (6 species), (b) hand-spread seed (33 species), and (c) control. After the first year of growth, both black plastic and herbicide had greater species richness than control, but there was no difference between the two site preparation treatments. Species richness was unaffected by the vegetation treatments. The addition of plants as plugs had the only significant effect of reducing the abundance of unwanted species. Detrended correspondence analysis was used to assess changes in community composition relative to a target community type (defined by the seed mixture). At this early stage, the addition of plants as plugs produced communities closest to the target composition. Clearly, it will be several more years before the results are definitive.

COMMUNICATION DISORDERS

RESPONSES OF PRESCHOOLERS WHO STUTTER TO CLINICIAN’S SLOW SPEECH RATE. Rebecca Brown, graduate student, with Lisa La Salle, faculty, same department. 2001 American Speech-Language and Hearing Convention, New Orleans, LA 14-18 Nov. 2001.

The purpose was to determine how preschoolers who stutter (PWS) respond to a clinician’s slow rate model, since this is a standard treatment technique. Six children (Median age = 49.5 mos; Range = 42-54 mos) were recruited because they were stuttering (Median time since onset = 24.5 mos; Range: 11-30 mos) and because treatment appeared warranted. Orthographic and phonetic transcriptions were made of all clinician/child adjacent utterance pairs that were intelligible and fluent (N = 130 pairs from the six baseline sessions and N = 86 pairs from the six treatment sessions). As a group, these six children did not entrain their speech rate to their clinicians’ slow rate, when both syllables per minute (spm) and phones per second were measured. There was a significant difference (p = 0.000) between the median dyadic gap found in Baseline and Treatment sessions, meaning that when the clinicians slowed (< 200 spm) in Treatment, the children’s rate exceeded the clinicians’ rate, creating negative dyadic gaps. Four of the six children spoke more fluently in the treatment condition, and the two children who did not were the only two who showed a concomitant phonological disorder, suggesting that further analysis of phonological abilities related to speech rate and fluency is warranted.
BEST PRACTICES FOR PRESCHOOLERS WHO STUTTER. Jennifer Carlson, Magda Dimitrijevic, Eryn McClutche, Keely Pease, and Tina Pirkl, graduate students, with Lisa La Salle, faculty, same department.

The relative effectiveness of indirect and direct approaches to treating stutterers is unknown. A combination of approaches plus the use of temperament management strategies could represent best practices. Five children who stutter, ages 3-5, participated in alternating treatment designs comparing baselines to 3 types of treatment sessions.

SLOW RATE EFFECT ON THE FLUENCY OF PRESCHOOLERS WHO STUTTER and PROVIDING RESOURCES FOR PARENTS OF PRESCHOOL CHILDREN WHO STUTTER. Jennifer Carlson, graduate student, with Lisa La Salle, faculty, same department.
ASHA Convention, Atlanta, GA, 21-24 Nov. 2002.

Slow Rate Effect on the Fluency of Preschoolers Who Stutter

This study assessed whether clinicians’ slow speech rate affects the fluency of subsequent spontaneous utterances of 9 preschoolers who stutter. Preschooler fluency of spontaneous utterances following clinicians’ slow vs. fast utterances was analyzed, and results provide further rationale for implementing indirect treatment.

Providing Resources for Parents of Preschool Children Who Stutter

Parents of children exhibiting early stuttering were surveyed to determine specific concerns they had during the initial months of the child’s stuttering. Responses were used to create a list of resources that can be provided to allow parents to further explore stuttering following consultations with an SLP.

LONG-TERM AVERAGE SPECTRUM MEASURES OF HMONG AND CAUCASIAN CHILDREN’S VOICES. Jennifer Carlson, graduate student, with Larry Solberg, faculty, same department.
ASHA Convention, Atlanta, GA, 21-24 Nov. 2002.

A high-frequency, long-term average spectrum (LTAS) analysis was applied to connected-speech samples of 30 Hmong and 33 Caucasian children. The Hmong children produced samples in Hmong and English. Speech samples in English did not differ between the two groups. The Hmong and English speech samples produced by Hmong children did differ significantly based on LTAS.

CONSUMER RATINGS OF NON-NATIVE ENGLISH SPEAKERS’ CLINICAL EFFECTIVENESS. Haley Harper and Nicole Litka, graduate students, with Linda Carpenter, faculty, same department.

Twenty parents of children receiving services in a university speech and hearing clinic listened to 12 randomized English samples from native speakers of English, Spanish and
Chinese and rated their comfort with each speaker as a provider of clinical service. They then rated the clinical effectiveness of the same speakers presented in a different order. No differences were found between comfort and effectiveness ratings for any speaker of any language. All English speakers were rated significantly more effective than any Spanish or Chinese speaker; ratings for these speakers did not differ from each other.

FREQUENCY OF NORMAL INFANT SWALLOW. Karleen Krause, graduate student, with Kristine Retherford, faculty, same department.

The proposed study was a preliminary collection of normative data on how often infants swallow within 1 minute. Twelve infants-newborns, 6-month-olds, and 12-month-olds were selected for participation. A wireless microphone system and portable audiotape recorder were used to record swallowing data and group means were obtained. Swallowing frequency tended to decrease with age.

LONG-TERM AVERAGE SPECTRUM AS A PREDICTOR OF DYSPHONIA. Karyn Nyhus, Katherine Radmer, Rebecca Brown, and Jonathan Schmitz, graduate students, with Larry Solberg, faculty, same department.

Connected speech samples of 20 subjects with perceptually normal voices and 20 subjects with dysphonia secondary to vocal nodules were compared using long term average spectrum (LTAS) analysis. Four measures were derived from the LTAS analyses. Results indicated significant differences between groups on the four measures of LTAS utilized (p < .05). One LTAS measure (i.e., difference between the maximum amplitudes in dB in the 0-2 kHz and the 6-10 kHz ranges) entered into a stepwise discriminant function analysis and correctly classified 77.5% of the voices (i.e., 80% of the normal voices and 75% of the dysphonic voices). Results of this study add to the growing body of research supporting LTAS as a useful acoustic measure for determining voice quality differences in connected speech that can be used in voice evaluations or when documenting change in voice quality due to treatment.

TREATMENT OF THE CONCOMITANT DISORDERS OF STUTTERING AND PHONOLOGY. Tina Pirkl, graduate student, with Linda Carpenter, faculty, same department.
ASHA Convention, Atlanta, GA, 21-24 Nov. 2002.

This session examines the relative effectiveness of simultaneously vs. alternately treating preschool children who stutter and exhibit disordered phonology. An indirect approach to stuttering and a cycles approach to phonology were used to treat 3 preschoolers with the concomitant disorders under 3 treatment conditions. Results are analyzed descriptively and statistically.

CLASSIFICATION OF VOICE DISORDERS USING LONG-TERM AVERAGE SPECTRUM MEASURES. Jonathan Schmitz, graduate student, with Larry Solberg, faculty, same department.
Voices of 15 normal subjects, 15 subjects with vocal nodules, and 15 subjects with unilateral vocal fold paralysis were analyzed using long-term average spectrum (LTAS). Discriminant function analyses were used to classify the voices based on the LTAS measures.

**Human Development Center**

**International Perspectives on Inattentive and Hyperactive/Impulsive Behaviors in the Classroom: Do Teachers in Sweden and the United States View These Behaviors Differently?**

Steven Carlson and Katarina House, graduate students, with William Frankenberger, faculty, same department.

*National Association of School Psychologists Annual Convention, Chicago, IL, 26 Feb. - 3 March 2002.*

Using a survey format, this project examines how teachers in the United States and Sweden (1) view the use of stimulants to treat inattention, hyperactivity, and impulsivity in children, (2) attribute the causes of these behaviors, and (3) rate the acceptability of various interventions used to treat these behaviors. The samples consist of 400 first through fourth grade general education classroom teachers randomly sampled from Wisconsin and 400 first through third grade general education teachers randomly sampled from Sweden. First, teachers are asked pertinent questions about their professional background. Second, they are prompted to read a descriptive vignette on a student whose behaviors meet the diagnostic requirements for ADHD according to the Diagnostic and Statistical Manual of Mental Disorders (4th ed). Third, teachers are asked a series of questions that attempt to elicit possible differences in how teachers in the United States and Sweden attribute causation and perceive the hypothetical student’s behaviors. Next, three interventions describing medical, behavioral, and educational approaches are presented along with questions about each intervention, such as each particular intervention’s acceptability to the teacher. This research is of interest because of the economic, educational, and social-cultural differences between the United States and Sweden and how these may influence how teachers perceive children who are inattentive, hyperactive and impulsive in the classroom. The results may facilitate further research on how factors in society contribute to ADHD behaviors and how the disorder of ADHD may be in part a socially constructed phenomenon.

**Psychology**

**The Relationship Between Middle School Students: Participation in Extracurricular Activities and Their Academic Performance.**

Tracy Bertram, graduate student, with Barbara Lozar, faculty, same department.

*Wisconsin School Psychologist Association, Green Bay, WI, 12-14 March 2003.*

**Information and Research on the Experience of Teenage Fathers.**

Bryce DeRoos, graduate student.

*Wisconsin School Psychologist Association, Green Bay, WI, 12-14 March 2003.*

ZERO TOLERANCE POLICIES: THEIR IMPACT ON STUDENTS’ PERCEPTIONS OF SAFETY IN SCHOOL. Laura Lockner, graduate student, with Kimberly Knesting, faculty, same department. NASP 2002 Annual Convention: Serving All Children, Chicago, IL, 26 Feb. - 3 March 2002.


OLDER AND YOUNGER SIBLINGS: PERCEIVED PRESSURE TO PARTICIPATE AND EXCEL IN HIGH SCHOOL ATHLETICS. Kristie Redmann, graduate student, with Barbara Lozar, faculty, same department. Wisconsin School Psychologist Association, Green Bay, WI, 12-14 March 2003.


ETHNIC IDENTITY ATTITUDES OF HMONG STUDENTS. Melissa Williams, graduate student, with Beverly Dretzke, faculty, same department. Wisconsin School Psychologist Association, Green Bay, WI, 12-14 March 2003.
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