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F I F T H A N N U A L

IWU Student

Research

Conference

Program



Illinois Wesleyan
Student Research
Conference

April 23, 1994

SCHEDULE OF ACTIVITIES

9:00 A.M. - 10:00 A.M.	ORAL PRESENTATIONS
10:00 A.M. - 12:00 P.M.	POSTER SESSION
12:00 P.M. - 1:30 P.M.	SPECIAL LUNCHEON
2:00 P.M. - 2:30 P.M.	POSTER SESSION
2:35 P.M. - 4:00 P.M.	ORAL PRESENTATIONS
4:10 P.M. - 4:45 P.M.	CLOSING REMARKS AND PRESENTATION OF CERTIFICATES BY DR. MINOR MYERS, JR., PRESIDENT, ILLINOIS WESLEYAN UNIVERSITY

The Organizing Committee would like to thank:

Minor Myers, jr, President, IWU

Janet McNew, Provost and Dean of Faculty

Carl Teichman, Assistant to the President

Melanie Moore

Jennifer Johns

Student Senate

Members of the Organizing Committee

Wayne Dornan, Assistant Professor of Psychology

Given Harper, Assistant Professor of Biology

Pamela Moro, Assistant Professor of Anthropology

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Jason Babcock	Amy Baird
Lisa Beal	Jennifer Bernstein
Joshua Birk	Steve Bond
Jennifer Bowman	Kimberly Branshaw
Kelly Brereton	Michael J. Busse
Ann Chalstrom	Laura Chapman
Jennifer Cioni	Emily Cointin
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Christie Ragle	Bryan Reeves
Susan Reynolds	Tamara Roush
Ossi Saarinen	Alissa Schafer
Symmonie Steger	Dena Strong
Renna Thakkar	Carl Tierney
Gregory P. Tinkler	Anjelica Ushatova
Harinie Wijeweera	David Wilmert
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STUDENT ABSTRACTS

* Indicates Faculty Supervisor

AGE RELATED RESPIRATION RATES IN LOGGERHEAD (CARETTA CARETTA) SEA TURTLES USED AS A MODEL FOR SPECIES CONSERVATION

Cheryl Achtemeier and Dr. Given Harper*, Department of
Biology, IWU

Mortality threats to loggerhead sea turtles can be grouped into surface and below-surface categories. Susceptibility to such threats (e.g. collision with boats, suffocation in shrimp nets, and entrapment in power plant uptake pipes) varies with loggerheads' activity in the water column. Loggerhead respiration is the only behavior that is consistent enough to provide a means of modeling their activity in the water column; sea turtles must breathe air at the surface of the water and pattern their swimming behavior to meet this requirement. This study monitored the respiration rates of four age-categories of captive loggerhead sea turtles. Time spent at the surface varied inversely with age; younger turtles spent more time at the surface, while older turtles spent more time below the surface. Breathhold time (how long an individual could remain under the water surface without needing to come up for air) varied directly with age. Older turtles had lower respiration rates than younger turtles, and therefore spent more time under water. These patterns are used to model specific mortality threats to loggerheads according to age.

REPRESENTATIONS IN BELIEF AND BEHAVIOR: THE PROBLEM OF MEANING IN AN EMPIRICAL PSYCHOLOGY

Peter Asaro, Lionel Shapiro*, and Larry Colter*,
Department of Psychology and Department of Philosophy, IWU.

The psychological perspectives of Behaviorism and Functionalism seek to study behavior and the mind through purely objective empirical methods. In the first part of this paper I argue that the objective, causal-physical relations of a mental state cannot strictly determine belief or intentional content. Thus any objective account of intentionality (i.e., Behaviorism or Functionalism) is incoherent.

In the second part of this paper I explore the ways in which Functionalists have tried to enlist mental representation to explain belief. I utilize the arguments of Robert Cummins to show that any causal-physical account of mental representation will leave representational content indeterminant. I argue that this representational indeterminacy is a derived version of the intentional indeterminacy presented in the first section. I show how this indeterminacy has caused great difficulties for theories which try to equate mental representations with beliefs, and also for Artificial Intelligence which designs computational models of representational systems.

In the final section I present Cummins' account of mental representation, Interpretational Semantics, and how it avoids making claims about content and remains objective. I then examine this theory's consequences for psychological method and theory as well as Artificial Intelligence.

**THE DETERMINATION OF COCAINE METABOLITE
IN URINE USING HIGH PERFORMANCE LIQUID
CHROMATOGRAPHY.** Jason R. Babcock and
David N. Bailey*, Department of Chemistry
Illinois Wesleyan University Bloomington, Illinois 61701.

The primary metabolite of cocaine found in the body after ingestion of the drug is benzoylecognine (BE). A problem arises in the detection of BE because it is highly water soluble and, therefore, difficult to extract from urine into a solvent. This problem makes cocaine one of the most difficult drugs to detect. Previous work has described a number of methods for the removal of BE from the urine followed by some form of analytical detection. The research in this paper focused on the use of an ion-pairing agent to aide in the removal of BE from aqueous solution. The ion-pairing complex used was a 0.05 M solution of hexakis(thiocyanato)iron(III), $\text{Fe}(\text{SCN})_6^{3-}$, with a maximum sensitivity achieved at $\text{pH}=2.7$. The urine was treated with the complex solution and immediately extracted with methylene chloride. The methylene chloride was then analyzed by High Performance Liquid Chromatography (HPLC) for the presence of the BE/complex ion pair. A detection limit well within the physiological concentration range was obtained.

DEVELOPMENT OF AN EFFICIENT AND ACCURATE METHODOLOGY TO PROJECT THE FINANCIAL AID BUDGET AT ILLINOIS WESLEYAN UNIVERSITY

Amy N. Baird, Department of Computer Science, IWU,
Dr. Susan Anderson-Freed*

The financial aid budget at Illinois Wesleyan University currently comprises approximately 24% of the education and general budget, and this percentage is increasing yearly. On the average, financial aid annually benefits 85% of the student population at IWU. Therefore, it is imperative for the administrators to be able to evaluate and predict the budgeting of these funds each year in order to best meet the needs of the students receiving aid, while remaining within the budgetary constraints for such funding.

In the past, a tedious case-by-case method was used to project the financial aid budget. This method was for the most part successful, but contained inevitable errors and consumed copious amounts of valuable time in its implementation. The purpose of my research was to develop a methodology that employs the use of existing computer software applications in order to simplify this complicated task, thus increasing accuracy and saving many hours of valuable time that could then be invested back into better serving the students of this university.

The methodology I developed used QuattroPro spreadsheets to organize and manipulate student financial aid data imported from the AS400 in such a way that it can be easily analyzed to predict next year's budget. This method bases the prediction on the current student financial aid profiles, and assumes that the projected student population will be very similar to the current year with a few estimated variances. Thus, this year's freshmen are projected to be next year's freshmen and sophomores, this year's sophomores to be next year's juniors, and this year's juniors to be next year's seniors.

The final important component of my research was to develop a step-by-step instruction manual for the implementation of this methodology. I also ensured that this method could easily be adapted for possible future use with a university-wide data base that would streamline the process even more. As the method stands, I estimate the time saved by implementing my methodology to be approximately two and one-half weeks of human resource time, or around one hundred hours per year.

BURNOUT, SOCIAL SUPPORT, AND COPING IN CRISISLINE VOLUNTEERS

Lisa M. Beal, Dr. Robert Lusk, Department of Psychology, IWU

This study examines the relationship among burnout, social support, and coping in volunteers. In this study, 30 volunteers from Rape Crisis Center of Bloomington, Illinois, will anonymously complete four questionnaires: the Maslach Burnout Inventory, the UCLA Social Support Inventory, a coping survey, and a demographic survey. The Maslach Burnout Inventory contains three subscales, Emotional Exhaustion, Depersonalization, and Personal Accomplishment. A question is asked on the demographic questionnaire regarding the respondent's perception of the turnover rate among the volunteers of the group. This response will be correlated with the three subscales of the burnout measure in order to establish if perception of turnover is related to burnout. Also, the respondents' scores on the subscales of the burnout inventory will be correlated with the total support received and the rape crisis group support to determine the impact of social support on burnout. In addition, two different coping styles, control and escapist, will be computed and correlated with the three subscales of the Maslach Burnout Inventory to measure the relationship between coping and burnout. The hypotheses are that high turnover will be related to greater burnout, higher levels of social support will relate to lower levels of burnout, and volunteers who use more control coping strategies and fewer escapist coping strategies will have lower levels of burnout.

Behavior and Thought Change After a Self-Improvement
Program: Studying the Effects of Environmental and
Other Factors on the Transfer of Training

Jennifer Bernstein, Dept. of Psychology, IWU,
Wayne Dornan*, Beth Rohweder, ISU

This study tested the attitude-behavior relationship and transfer of training on a specific training program - The Seven Habits of Highly Effective People. It is a self-improvement program designed to improve such things as: interpersonal relationships, time management skills, and concentrating only on what one can change. The subjects were 84 BroMenn Healthcare employees signed up to take the training program. Both groups were given a pre- and post-test consisting of four parts: one's behaviors and thoughts (including questions on locus of control), countertraining, and two parts of the Personal Strain Questionnaire. It was hypothesized that after taking the class: one's behavior and thoughts scores will increase, and one's post-test personal strain scores will decrease. In addition, subjects with low pre-test countertraining scores (meaning there is a lot of countertraining) will show very little or no change in their behavior and thoughts survey score. Subjects with a high pre-test locus of control score (meaning they have an internal locus of control) and/or felt positive about the usefulness of the course will show greater change in their behavior and thoughts survey score. The results will be discussed at the Research Conference.

THE RELATIONSHIP BETWEEN SELF-ESTEEM AND THE AMOUNT OF SOCIAL COMPARISON

Josh Birk, Jennifer Contarino, Esther Franco, Tressa Gipe,
Jeff Melton*, Dept. of Psychology, IWU

The relationship between self-esteem and amount of social comparison has not been previously investigated. According to social comparison theory, the primary motivation for engaging in social comparison is to reduce uncertainty about the self. Previous research has found that low self-esteem (LSE) individuals are uncertain about themselves. Therefore, it may be hypothesized that LSE individuals engage in much social comparison. However, LSE individuals by definition have a relatively unfavorable opinion of themselves. Therefore, it seems plausible that they will avoid social comparison for fear of comparing unfavorably. These hypotheses were examined in two studies. In experiment 1, students who had completed several inventories of self-esteem and personality received their graded psychology test. A folder containing classmates' test scores was left for them to examine while the experimenter left the room. A hidden experimenter recorded how long the student spent looking at the scores. In Experiment 2, students who had taken inventories similar to those in Experiment 1 completed anagrams which were either difficult or easy and a dot estimation task. The amount of time they subsequently spent looking at other students' scores was recorded.

TOWARD AN UNDERSTANDING OF ALZHEIMER'S DISEASE VI: A COMPARISON OF THE EFFECTS OF BILATERAL INJECTIONS OF β A (1-42) AND β A (25-35) INTO HIPPOCAMPUS ON THE ACQUISITION OF A SPATIAL TASK IN THE MALE RAT

Steven M. Bond and Wayne A. Dorman*, Department of Psychology, IWU

Alzheimer's disease (AD) is a neurodegenerative condition which presently affects more than 4 million Americans. Cognitively, AD manifests itself through gradual memory loss, learning disruption, and dementia. The neuropathology of AD is not completely understood though it is generally agreed that the neurons of the hippocampus are among the neuroanatomical structures selectively targeted in the disease. Extracellular neuritic plaques and intracellular neurofibrillary tangles have been identified as characteristic neurohistological features that may play a role in AD etiology. Accumulating evidence suggests that the aggregation of the 39-43 amino acid protein, beta amyloid (β A), may exhibit neurotoxicity either individually or synergistically with excitotoxins in the brain. Dorman, Kang, McCampbell, and Kang (Neuroreport, 1993) reported that bilateral injections of β A (25-35) in combination with a subthreshold dose of ibotenic acid (IBO) produced a dramatic disruption in acquisition of spatial learning in the rat. This deficit was accompanied by cell death in the hippocampus that mimicked the degeneration observed in AD. In that study, however, injections of β A (25-35) alone had no effect on the acquisition of spatial learning. At present, whether fragments of β A or the full protein produce neurotoxicity in neurons remains somewhat controversial. Therefore, in this study the effects of bilateral injections into the hippocampus of β A (1-42) on the acquisition of spatial learning in the rat were compared with β A (25-35), saline, and a subthreshold dose of ibotenic acid. Comparisons were made using a partially baited 8-arm radial arm maze. To assess the effects of these injections on spatial learning, the following parameters were recorded: session latency, latency to first choice, total number of choices, total correct choices, reference memory errors, working memory correct and incorrect errors, and choice accuracy. The results of this study will be presented at the conference.

ADVERTISING AIMED AT WORKING WOMEN DURING WORLD WAR II
AND IMMEDIATELY AFTER

Jennifer Bowman and Fred Hoyt*, Departments of Business
and Art, IWU.

This study uncovered the advertising industry's motivations to help the government in the recruitment campaigns for women workers during the war and then to attempt to persuade working women to return home during reconversion. It takes an in-depth look at the techniques employed in such advertising. This study also analyzed the effects advertising had on social attitudes, women's career choices, and women's daily lives. Eleven women were interviewed that worked in civilian jobs, war jobs, and the armed services during W.W.II. Numerous advertisements were collected and combined with the results of this study to create a series of visual projects. These projects relate historical, personal, social, and interpreted viewpoints about the researched subject to the viewer.

THE EFFECTS OF WATER INJECTION ON WITHIN SESSION PATTERNS OF RESPONSE FOR FOOD REINFORCERS

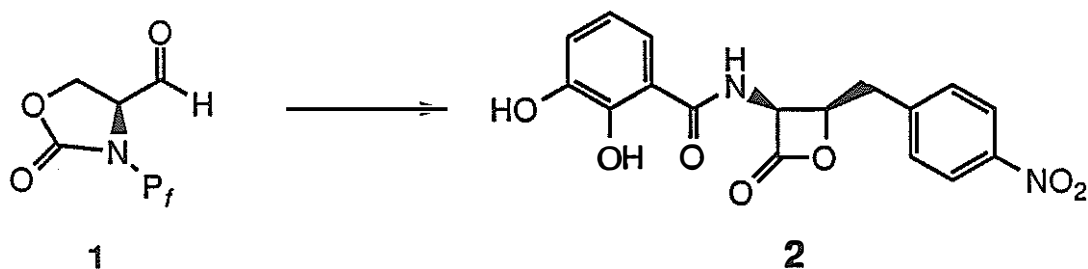
Kelly Brereton and Jim Dougan*, Department of Psychology, IWU

A new concern emerging within Behavioral Psychology stems from the finding that responding within an experimental session produces a bitonic curve. These findings suggest that all previous equations and theories relying on average rate of responding within a session, are conceptually invalid. Although this phenomenon, dubbed the "Within Sessions Effect", has been demonstrated to be fairly consistent, previous studies have failed to find a cause for the ascending or descending limb of the response function. The present study proposes that the decreasing portion of the function may be explained by the increasing thirst produced by the dry food pellets used as reinforcers. The subjects were 6 naive Long Evans hooded rats trained to press a bar on a multiple VI30 schedule of reinforcement. Water bottles containing 150 ml of water were placed in the Standard Operant chambers for 15 of the 30 experimental sessions. As a control measure, empty water bottles were placed in the Skinner boxes for the other, randomly dispersed, 15 days remaining. Results shed light on possible causes for the Within Sessions Effect and suggest alterations in standard operant experimental procedures. The results also suggest implications of an interaction with Schedule-Induced Polydipsia.

A PROPOSED NOVEL SYNTHESIS OF (+)-OBAFLUORIN.

Michael J. Busse and Dr. Jeff Frick*, Department of Chemistry, IWU.

In the continuing search for antibiotics, a novel β -lactone antibiotic has been discovered in strains of *Pseudomonas fluorescens* bacteria in various locations around the world. In our proposed novel synthesis of this β -lactone, called (+)-obafluorin **2**, we require the use of aldehyde **1**. Two methods of synthesizing compound **1** are being explored. One method has shown to be unsuccessful; the other is currently being tested. The results of these experiments will be presented.



* faculty advisor

INFLATION IN THE EUROPEAN COMMUNITY:
A STUDY BEFORE AND AFTER GERMAN UNIFICATION

Ann Chalstrom and Pam Lowry*, Department of Economics, IWU

This project focuses on the economic interaction among the member nations of the European Community (EC) by studying inflation rates in the EC before and after German unification, which occurred in 1990. The first hypothesis tested in this project states that before 1991, the implementation in the EC of a fixed exchange rate system with a band along with a strong, stable German economy, led to inflation rate convergence by the EC member nations to German inflation rates. The second hypothesis tested in this study states that German unification, which has had a destabilizing effect on the German domestic economy, resulted in inflation rate divergence from Germany by the EC member nations. The implementation of a fixed exchange rate system is the theory which explains convergence of inflation rates. The results, presented in descriptive graphs, statistical tests, and a regression model, show that inflation rate convergence by the EC members to German inflation rates occurred before German unification, while after unification, EC members' inflation rates were no longer drawn to Germany's rates of inflation.

TOWARD AN UNDERSTANDING OF ALZHEIMER'S DISEASE V: DOES CHRONIC STRESS PLAY A ROLE?

Laura L. Chapman and Wayne A. Dornan*, Department of Psychology, IWU

Alzheimer's disease which currently affects 4 million people in the United States, has been neuropathologically identified by the presence of neuritic plaques. Accumulating evidence has implicated that deposition of a protein, called beta amyloid (β A), may play a causative role in the deterioration of cognitive function characteristic of Alzheimer's disease. Nonetheless, the mere presence of beta amyloid deposition in the central nervous system does not invariably predict Alzheimer's disease. Consequently, one major question that remains to be answered is what are the precipitating events that lead to beta amyloid-induced neuropathology. Recently, a study done by Dornan, Kang, McCampbell, and Kang (Neuroreport, 1993) reported a dramatic effect on the acquisition of spatial learning in the rat following bilateral injections of beta amyloid and ibotenic acid into the hippocampus. In that study, they speculated that the neurotoxic and behavioral effects observed were the result of a synergistic effect of ibotenic acid and beta amyloid which lead to an increase in calcium influx known to be neurotoxic to cells. It is noteworthy that glucocorticoids (stress hormones) released from the adrenal cortex also work via calcium channels and have been shown to be toxic to hippocampal neurons. Therefore, one possibility is that chronic stress, which releases glucocorticoids and increases calcium influx, may precipitate beta amyloid neurotoxicity. In an initial attempt to evaluate the interaction between beta amyloid and glucocorticoids, a preliminary pilot project was done to assess the effects of bilateral injections into the hippocampus on the acquisition of spatial learning in the rat. Two groups were utilized: group 1, 1 ml subcutaneous cortisol (7 mg/ml) injections and intrahippocampal injections of .5 microliter per side of β A (1-42); group 2, adrenalectomized and intrahippocampal injections of .5 microliter per side of β A (1-42). These groups were compared to two groups from the Dornan, Kang, McCampbell, and Kang study: group 1, ibotenic acid bilaterally injected into the hippocampus (25 nmol/side); group 2, bilateral hippocampal injections of saline. After adequate recovery time, spatial learning was assessed in each animal. A partially baited 8-arm radial arm maze (RAM) was used as the testing apparatus. Each subject was assigned one of four maze orientations. At the beginning of the RAM test, each animal was placed in the center of the maze and permitted to choose among the arms until it either found all bait or until 10 minutes had elapsed. Each subject was tested once daily for two weeks. After two weeks of having five baited arms, the configuration was then changed to have only two baited arms for an additional week. The number of arms revisited (total errors), repeated entry into previously baited arms (correct errors), entry into arms which were never baited (reference memory error), and repeated entry into unbaited arms (incorrect errors) were all recorded and analyzed by an ANOVA. The results of this study will be presented at the conference.

THE WITH-IN SESSION EFFECTS OF STIMULI

Emily Cointin, Bryan Reeves and Jim Dougan*,
Department of Psychology, IWU

Traditionally, data collection and analysis has been taken across sessions with little interest given to differences within the session. However, McSweeney (1990) has shown differences within the session can have effects on the outcome of an experiment. Alternation of stimuli seems to be an important factor, but the reasons remain unclear. Two experiments were designed to determine the effects of stimuli on within-session response patterns. Six naive, female, Long-Evans Hooded rats were used in the study. In experiment 1, each subject was placed in a standard operant conditioning chamber on either of the two schedules. The first condition administered multiple VI30 - VI30 second schedule in which one bar was extended into the chamber for 5 minutes, retracted and immediately re-extended. In the second condition, the subjects were placed on multiple VI30 - VI30 seconds schedule in which one bar was extended for 5 minutes, retracted and then the other bar was extended for 5 minutes. Each session lasted for 1 hour and each subject was exposed to both conditions for 20 days with 3 of the subjects receiving each of the conditions first. In experiment 2, each subject was placed on multiple VI30 - VI30 schedule with the bar extended for variable amounts of time. In one condition, the bar was extended for 5 minutes then retracted and the other bar was extended for 5 minutes, in the other condition, the bar was extended on a VI5 minute schedule with alternating bars. Each session lasted 1 hour and each schedule was alternated after 15 days. In both experiments, it is expected that significant differences will be shown between the two conditions.

THE EFFECTS OF ALTERNATING REINFORCERS ON WITHIN-SESSION CHANGES IN RESPONSE RATES

Jennifer Contarino, Jason Goebel, James Dougan*, Dept. of Psychology, IWU

Recent research has studied rate of response within-sessions. McSweeney has found a consistent pattern of response rate within-sessions which is unapparent when rates are averaged between sessions. This rate peaks about 20 minutes into the session then gradually decreases. An explanation for this phenomena has not yet been determined. Six naive female Long-Evans Hooded rats were shaped for reinforcers of both food and water. They were then tested on a VI schedule during hour long sessions with reinforcers of food pellets for the first 40 minutes followed by water for the remainder of the session. Rates of response are expected to be more constant, without a decline after 20 minutes. This would suggest that alternating reinforcers have an impact on within-session response rate. Results such as these would have implications on future design and theory.

EXPERT - NOVICE DIFFERENCES OF ERROR RECOGNITION IN CALCULUS PROBLEMS

Alisha Crawley and Lionel Shapiro*, Department of Psychology, IWU.

Previous research in the area of expert-novice comparisons of mathematical problem solving has focused on the differences in categorization of and performance on math problems. The conclusion has been that while solving or categorizing problems, experts focus on deep processing and novices focus on surface structure. Other research dealing with true/false multiplication equations has shown that adults (considered experts in multiplication) can reject false answers before processing the equation. This study attempted to extend these findings by looking at the differences between experts and novices in the recognition of errors in true/false calculus problems. The subjects were professors (experts) and math students (novices) at IWU. The experiment consisted of 68 true/false calculus problems at all levels of difficulty. The subjects were instructed to answer true or false as quickly as they could without sacrificing accuracy. Reaction time, accuracy, and level of confidence were recorded. Based on the previous studies, we expect to find experts able to process errors at a faster rate. Thus, providing further support for the hypothesis that experts are not only quantitatively better at task performance, but qualitatively different from novices in the type of processing they employ. Results and implications are discussed.

THE PHOTOLYSIS OF NITRITE.

Deborah A. Cull and Timothy R. Rettich*, Department of Chemistry, IWU

The photolysis of the nitrite ion, NO_2^- , yields the free radicals nitric oxide, NO, and hydroxyl radical, OH. It has been found by Treinin and supported in this laboratory that no net reaction occurs when nitrite is photolyzed in pure water. Zafiriou has extensively studied the solar photolysis of nitrite-containing seawater, and has detected increased partial pressures of NO during the day, as well as decreased nitrite concentrations, which both suggest that the photolysis of nitrite occurred.

In pure water, the OH and NO radicals produced from the photolysis of NO_2^- presumably recombine and ultimately reproduce NO_2^- . In the presence of benzene, a known radical scavenger, this process is interrupted and net photolysis of nitrite is observed. This particular scavenging process is of primary interest to this research. Aqueous nitrite saturate with benzene has been photolyzed at 366nm. The effect of varying the pH as well as the solvent for maximal extraction of the scavenger product has been studied. Ideally, the identity of the product will be obtained, leading to the quantification of the scavenging process. The reaction has been monitored both spectrophotometrically as well as by a nitrite-specific electrode. In addition to the photochemical reaction, the thermal reaction of nitrite in the presence of benzene has been tested. The scavenging of the hydroxyl radical by benzene has been studied by producing OH via hydrogen peroxide and a catalyst. Long range goals include the determination of the quantum yield with respect to nitrite disappearance, with the results applied to the photolysis of nitrous acid, a process that occurs in polluted atmospheres.

POLYELECTROLYTE GELS AS ARTIFICIAL MUSCLE SYSTEMS

Garrett Davis, Kimberly Branshaw, Dana Deardorff,
and Narendra K. Jaggi*
Physics Department, Illinois Wesleyan University

During the last three years, electromotility of polyelectrolyte gels in ionic solutions has been aggressively pursued at Toyota and Ibaraki Univ. as potential futuristic chemomechanical engines. We have discovered that the underlying physics is much more complex than what has previously been believed, e.g. we find that bending as a function of time seems to obey a $t^{0.5}$ power law, is inconsistent with the idea of a bending speed and strongly points toward a diffusion mechanism. Kinetic evidence of diffusion was confirmed by experiments on gels grown in the presence of dyes. We have explored the effect of varying poly-ion concentration in the backbone and in the surrounding medium. We have discovered that in some cases, the electromotility cannot be described as simple bending. We have also discovered a rich behaviour in the electrical conductivity of these complex materials. Unfortunately, this is not yet understood. Light scattering experiments are also under way.

Acknowledgment: This research was supported in part by a grant (# NAG-8-258) from NASA under the NASA/JOVE program

EXOTIC, THREE DIMENSIONAL MACRO-STRUCTURES IN
GELS PRODUCED BY KINETICALLY LIMITED AND
GEOMETRICALLY CONSTRAINED COARSENING

Dana Deardorff, Kimberly Branshaw and Narendra K. Jaggi *
Physics Department, Illinois Wesleyan University

We have recently discovered a rare and elegant coarsening mode in some polyelectrolyte gels that leads to intermediate structures that are complex and beautiful. They were discovered accidentally when a relatively large and thick cylindrical piece of the high density, crosslinked polymer was allowed to swell in water over an extended period. The resulting structure and its time evolution are not easily described in a capsule form. They evolve from monotonous cylindrical shapes in the beginning to periodic, circular, gear-tooth-like structures at short times. At intermediate stages, the elegant three dimensional, orchid-like patterns border on the sensuous. After a long time (of the order of days for length scales of an inch or so), the object is a scaled-up replica of the initial cylindrical structure. Curiously, the intermediate structures, however complex, are quite reproducible in all essential features. The results and our qualitative understanding of this phenomenon will be presented.

Acknowledgment: This research was supported in part by a grant (# NAG-8-258) from NASA under the NASA/JOVE program

INVESTMENTS IN HUMAN CAPITAL AND THE TRANSITION OUT OF POVERTY FOR YOUTHS

John DeHerrera and Dr. Michael Seeborg*, Division of Economics, IWU

Economic theory suggests that an important strategy in moving youths out of poverty is to increase their earnings potential by investing in their human capital. Of course, such strategies can follow several alternate courses. These include pursuing higher education, vocational training, and military enlistment, to name several. This paper seeks to explore the effects of specific strategies of human capital investment on the movement of youths out of poverty using the human capital model to explain the effects of various economic influences. Hypotheses will be tested by employing the National Longitudinal Survey of Youth (NLSY). This database is particularly well-suited to the proposed research in that it surveys a large sample of youths aged 14-17 in 1979. It then interviews them every year thereafter through 1991. Hence it is possible to trace each youth's human capital decisions over this time period. A model will then be developed using logit equations to estimate the effects of various human capital investment decisions on the probability of moving out of poverty when controlling for a set of background variables. The model will allow for background factors to be altered to test the effects on many different hypothetical individuals. It is proposed that formal education is the most powerful predictor poverty status.

THRENODY

Amanda Dehnert and Curtis C. Trout*, Department of Music Theatre, IWU

Threnody is the title of a dramatic play with music, written, composed and directed by Amanda Dehnert. It was performed in the E. Melba Johnson Kirkpatrick Laboratory Theatre, McPherson Theatre, and the Weidner Center for the Performing Arts in Green Bay, Wisconsin as a Region III finalist in the American College Theatre Festival. It is an exploration into the effects of mystical European folklore on American society. Act I, *The Crossing*, is set in the Ozark mountains around 1900 and presents two sisters who are confronted with physical representations of folkloric creatures. This first act examines the very real beliefs of the mountain peoples and how it is that faith in the unseen and unknown can alter the reality of one's existence. Act II, *Wishing Well*, has a similar theme with a contemporary setting; new characters explore the same issues of faith and the individual, showing how one man allows his life (and then the lives of his wife and child) to be shaped by a spirit. This act brings into question the concept of "wishing" and the forces involved - whether the consequences of a wish are the responsibility of the individual or the supernatural.

The two acts presented under the guise of a single drama create a larger thematic statement: the folklore belonging to a culture which came thousands of years before us has very real repercussions on the human spirit even today; and despite the scientific developments of society, there are still and will always be things that science cannot explain, and there will always be a part of the soul tied to mythic forces. The music composed was for unaccompanied voices in the mode tradition. It created a mood for each piece as well as helped to establish the ancient nature of the spiritual forces involved.

The piece was entered in the American College Theatre Festival, and was chosen as the only original work and the only student-directed/designed production out of 40 university productions in a five-state region to be one of 6 presenters at the regional festival in Green Bay. Amanda Dehnert received an award for Meritorious Achievement from the Regional board for Threnody.

IDENTIFICATION OF INNER-CITY AFRICAN-AMERICAN
CAREGIVER'S INFORMATIONAL NEEDS IN PROVIDING CARE FOR
THEIR CHILDREN

Stacie De Lair and Margo Tennis*, School of
Nursing, IWU.

The purpose of this study was to identify the information inner-city, African-American caregivers wanted in order to provide better care for their children. Thirty-five African-American caregivers of children, aged three to seven years, were interviewed. The gender, relationship to child, number of children cared for regularly, and the desired informational needs were identified. Frequencies and descriptive statistics were used for data analysis. Results showed that parenting-discipline and safety were each identified by approximately 25% of the respondents as desired informational needs. Almost 20% of the responses indicated no need for information. Other categories where a need for information was identified were nutrition (10.1%), other topics (8.5%), health state (6.7%), and parenting-education (5%). Future educational programming is recommended regarding identified informational needs. Further research needs to be done in a variety of settings to determine more about areas of informational need.

Developmental Factors in Visual Search:
A Test of the Inhibition Deficit Hypothesis in a Feature Integration Task

Stacy Forbes and Johnna Shapiro*, Department of Psychology, IWU.

Many differences in cognitive functioning have been noted between younger and older adults. One of the most robust findings is that the elderly are more easily distracted by irrelevant information, possibly due to normal degeneration of the frontal lobes. This is known as the inhibition-deficit hypothesis, and may be useful in explaining older adults' deficits in visual search tasks, such as those designed by Treisman. Treisman's Feature Integration Theory suggests that there are two ways to process information: parallel processing, an automatic process that does not require directed attention, and serial processing, which does. Recent studies have suggested that the elderly may be deficient in serial search tasks. This study will attempt to provide evidence for the role of inhibitory processes (and therefore frontal lobe involvement) in serial, but not parallel search. One way to do this is to determine whether frontal lobe development can predict performance on serial search tasks. The frontal lobes of young children are not fully developed, whereas the elderly's frontal lobes are the first to degenerate in old age. Thus, preschool children, college age students, and elderly adults participated in the experiment. Reaction times (RT) were measured during parallel and serial processing tasks. Subjects searched for a single fixed target in one of three display types requiring serial, parallel or both types of searches. It is expected that flat RT slopes will be found for parallel processing trials for all ages, while a bell curve should be found for the serial processing trials. It is therefore predicted that young children's performance on serial search tasks should be the lowest, followed by the elderly, and that young adults should show the best performance on these tasks.

THE CRETACEOUS/TERTIARY EXTINCTION EVENT AND CLUES
REGARDING THE EXISTENCE OF WILDFIRES: A CARBON STUDY.

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Illinois Wesleyan University, Bloomington IL 61702.*

The theory that a giant meteorite impacted with the Earth 65 million years ago (Alvarez *et al.*, 1980), causing the world-wide mass extinction at the Cretaceous/Tertiary (K/T) boundary, was supported by the discovery of major wildfires by Wolbach *et al.* (1985). Samples collected in Haiti, near the proposed location of the impact crater in the Yucatan Peninsula, may yield clues which will further support the impact/wildfire cause of the extinctions at the K/T boundary.

Alternating rock demineralization treatments of HCl and HF were used to isolate elemental and organic carbon from sedimentary rock samples spanning the K/T boundary at the deep sea Beloc site in Haiti. After determining the mass abundance of reduced carbon in each sample, half of the resulting residue was removed and carbon isotopes ($^{13}\text{C}/^{12}\text{C}$) measured using mass spectrometry. The remaining portion is currently being oxidized with $\text{Cr}_2\text{O}_7^{2-}$ to remove organic carbon and kerogen, leaving elemental carbon. Elemental carbon will be analyzed isotopically and imaged using a scanning electron microscope to determine its morphology. If the carbon has the characteristic morphology of soot ("bunch of grapes"), the soot content of that sample can be determined. A discovery of soot would support the existence of wildfires 65 million years ago. The results of mass abundance, isotopic composition and scanning electron microscope studies may thus yield information to indicate the global environmental stresses which contributed to the Cretaceous/Tertiary mass extinctions.

POST-COLD WAR NATIONALISMS IN GERMANY AND AUSTRIA: A COMPARATIVE STUDY

Garett Graubins and Dr. Robert Leh*, Department of Political Science, IWU

The force of nationalism has dictated the course of events in Europe since the late eighteenth century. Since that time, nationalism has become a dynamic force, encompassing a nation's language, territory, customs, traditions, and religions. Nationalism continues to play a major role even today as Europe struggles to establish common nationality through the formation of one unified body.

The brand of nationalisms thus far manifesting themselves in Austria and Germany represent a center road between isolationist xenophobia on one end and a European multi-nationalism on the other. Right-wing political parties have enjoyed a surge in popularity while establishing arguably xenophobic platforms. The multi-nationalist side of the spectrum is reflected in the growing emphasis on such multi-national organizations as the North Atlantic Treaty Organization, United Nations, and European Community. Germany and Austria are currently absorbed with internal affairs -- economies, rising unemployment, and a massive influx of immigrants from Eastern Europe. Europe is simultaneously seeking its own brand of national identity and has thus far failed to provide the requisite attention and political will necessary to deal with security threats both home and abroad. At the same time, authoritarian temptation has found a seed in widespread discontent over economic reforms and eagerness to assert national identities while siezing populations from Belgrade to Moscow. In a post-Cold War Europe seeing a return of nationalist thinking, stable German and Austrian nationalisms will be essential if an anchor in an unstable Europe is to be found. The two States form a geo-political outpost between Eastern and Western Europe at which policies of economic integration and immigration will be put into practice.

This comparative study focuses upon the emerging nationalisms of two countries which will play major roles in the formation of a unified Europe as they define their respective national identities. The comparative model adopts a traditionalist approach in its formation of a definition of nationalism which is subsequently applied to discern what forms of nationalism Germany and Austria are adopting. Quantitative methodology will demonstrate that popularity of the right-wing political parties peaked during the post-Cold War years which experienced the greatest amount of immigration and economic trials. A conclusion will show that the two nations are subsequently flowing away from an isolationist brand of nationalism and closer to a more multi-nationalist emphasis in State affairs. The emerging nationalisms in Germany and Austria will play a central role in the future direction of not only Central Europe but the entire continent as it braces itself for the 21st century.

THE McLEAN COUNTY JDC: AN EVALUATIVE TOOL FOR DETERMINING THE FEASIBILITY OF OUTSOURCING JUVENILE DETENTION

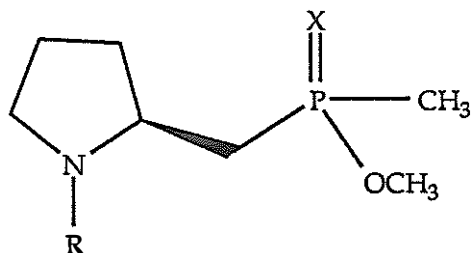
Paul Halley, Department of Economics, IWU and
Robert Leekley*, Department of Economics, IWU

The purpose of this research was to compose a systematic procedure, using cost-effectiveness analysis, to determine the feasibility of expanding government services by constructing on-site juvenile detention facilities, as opposed to outsourcing juvenile detention to other nearby counties. This research discussed and evaluated County of McLean, Illinois officials' recent decision to build a juvenile detention center (JDC). By examining the local economic impact (i.e. property values, sales taxes and property taxes) of the JDC, this research focused on the costs associated with the McLean County Government, employees of the JDC, McLean County citizens, and juveniles. Results indicated that the decision to build a JDC was not cost-effective, as the long-run costs associated with the outsourcing of juvenile detention were less than those associated with the construction of the JDC. Possible implications concerning the future use of this analysis for other counties to determine detention feasibility are discussed.

A SYNTHETIC STUDY OF AN ORGANOPHOSPHOROUS COMPOUND AS AN ACTYLCHOLINESTERASE INHIBITOR.

Sulay Jhaveri and Dr. Jeff Frick*, Department of Chemistry, IWU.

Acetylcholinesterase is the enzyme that catalyzes the hydrolysis of the neurotransmitter acetylcholine into acetic acid and choline. Based on the transition state of that reaction, and what is known about the structure of the enzyme, a study was conducted on the synthesis of organo-phosphorous compounds which could potentially inhibit the enzyme. The asymmetrical synthesis was initiated with a conformationally constrained compound, L-serine, and several methods of combining it with the thionyl phosphorous moiety were attempted in order to get the desired product.



R = H, CBZ, (CH₃)₂

X = S, O

* faculty advisor

SUPPLY, DEMAND, AND COMPETITION ON SIMPLE INTERVAL SCHEDULES

Jennifer D. Johns, Jennifer Cioni, Dept. of Psychology, IWU, Dr. James D. Dougan*

Recent studies have shown that the law of supply and demand describes behavior on simple Variable Interval (VI) schedules. When the quantity of reinforcement supplied is large, rats will "pay" less for the reinforcer than when the quantity supplied is small. Last year, two studies examined the effects of social context on the economic behavior of rats on VI schedules. Rats responded on a series of VI schedules differing in reinforcement rate. During half of the sessions, a second rat was placed in the chamber behind a plexiglass barrier. Although the third experiment in the series utilizes the same procedures employed in the earlier studies, there was a significant modification to the plexiglass barrier. As predicted by economic theory, there was an inverse relationship between quantity of reinforcer supplied and the obtained behavioral cost of reinforcement. In addition, the presence of a "competitor" rat altered the relationship between supply and cost.

TYPES OF STRESS ASSOCIATED WITH THE ONSET OF PANIC DISORDER AND SOCIAL PHOBIA

Diana L. Johnson, Department of Psychology, IWU and
Timothy J. Bruce*, Department of Psychiatry, UICOMP

The present study examined the association of different types of stress with the onset of both panic disorder and social phobia. Twenty-three subjects who met the DSM-III-R criteria for panic disorder and twenty-three subjects who met the DSM-III-R criteria for social phobia were matched on the demographic variables of sex, race, level of education, and time of retrospection. Data related to circumstances surrounding onset were collected from initial diagnostic interviews. Descriptions of the circumstances were then rated and classified by blind independent raters into categories of no stress/stress, conditional stressor/background stress, and evaluation related stress/not evaluation related stress. Results indicated that stress was found at the onset of both panic disorder and social phobia. Moreover, conditional stressors were found to be associated with the onset of social phobia, whereas background stress was more associated with the onset of panic disorder. Furthermore, evaluation related stressors were more associated with the onset of social phobia than panic disorder. However, evaluation related stressors were not found to discriminate between the subtypes of social phobia. Possible treatment and preventative implications are discussed.

VI RESPONSE FUNCTION AND ELAPSED TIME

Colleen M. Kennedy and James D. Dougan*,
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Previous experimentation studying the relationship between response rate and reinforcement rate on simple variable interval schedules has been inconclusive. Some studies have found a monotonic relationship, others a bitonic. The present experiment examined the effects of elapsed time on the response function. Six rats pressed a retractable bar for food while on one of four variable interval (VI) schedules (VI 7.5s, VI 15s, VI 30s, VI 480s) with the bar available only during the first ten minutes or the last ten minutes of 30 minute sessions. A bitonic function was found in all six rats under each condition. However, the function was more strongly bitonic when the bar was available in the last ten minutes of the session. The results support that elapsed session time has an effect on the form of the response function.

USING RANDOM SEQUENCE PRIMERS IN THE POLYMERASE CHAIN REACTION TO IDENTIFY GENDER-SPECIFIC GENETIC MARKERS IN HOUSE WRENS

Jeremy J. Kirchman, Sheryl Swartz Soukup, and Given Harper*
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Visual gender identification in birds can be difficult if not impossible in sexually monomorphic species and is complicated even in dimorphic species when the sex of juvenile birds is sought due the lack of external sex characteristics. Surgical examination is reliable but is not practical because it is invasive and may place the organism at great risk. Furthermore, surgeries are time consuming and can only be performed by experienced field technicians making large scale gender identification an impossible task. Genetic based gender verification techniques, such as karyotype analysis, have been used to locate the W sex chromosome found only in heterogametic females. However, such studies have met with limited success due to difficulties in obtaining avian chromosome spreads or due to indistinguishable sex chromosomes. A reliable gender identification method that uses genetic markers identified within the DNA would be an asset to the researcher because it would require only a minimal blood sample which could be collected in the field without harming the bird and stored easily for long periods of time. Griffiths (1993) described such a technique based on the generation of RAPD markers (Random Amplified Polymorphic DNA). The use of RAPDs involves the amplification of genomic DNA in the polymerase chain reaction (PCR) using primers of arbitrary oligonucleotide sequence to generate a range of DNA fragments that can be separated by agarose gel electrophoresis. This study employs Griffiths' method to generate a reliable sex probe for the house wren (Troglodytes aedon) using RAPDs to isolate female-specific markers from random locations on the W sex chromosome. If successful, the sex probe will be used in future studies of house wren sex ratios. Specifically, gender identification information of house wren nestlings will be used to investigate facultative manipulation of sex ratios and similar phenomena that will require large-scale, accurate, and efficient determination of gender.

WOMEN IN PRIVATE PRACTICE

Barb Kube and Dr. Michael Seeborg*, Department of Economics, IWU

A recent survey conducted by the American Bar Association (ABA) revealed that females account for 40-50 percent of law school enrollment and around 22 percent of our nation's lawyers. While there is no evidence of direct wage discrimination, 54 percent of female lawyers (and 29 percent of male lawyers) feel that men have a greater chance of becoming involved with firm management.

Using Dr. Barbara Bergmann's model of labor market overcrowding as a theoretical framework, this study proposes that stereotypes and society's perceptions about what is "normal" actually divide the legal labor market into two separate labor markets--one for male and the other for female lawyers. My research analyzes two separate samples. First, a sample of 45 lawyers from the National Longitudinal Survey of Youth (NLSY) is examined for evidence of wage and attitudinal differences among males and females. Second, data on four hundred randomly selected lawyers was obtained from the Martindale-Hubbell Law Directory (MDH), and it is studied with respect to educational background, experience, areas of practice and in-firm status.

Unlike the ABA survey, my results indicate that significant wage differences do exist for young lawyers. OLS regression and cross-tab analysis of the NLSY data reveals that, even after controlling for experience, females attorneys earn \$16,539.18 less than their male colleagues. This is consistent with Bergmann's theory. LOGIT regression and cross-tab analysis of the MDH sample offers further support. While my results do not find significant evidence of crowding in the specific areas of practice, they do reveal that some crowding may be present with respect to partnership status. Specific findings will be presented at the conference.

EDUCATIONAL ATTAINMENT:
THE EFFECTS OF SOCIOECONOMIC DIFFERENCES

Lisa Kumazawa & Dr. Michael Seeborg*, Dept. of Economics

Education has important functions in contemporary American society. In economics, it is considered an investment in human capital which enhances the recipient's future productivity. The U.S. is a nation comprised of ethnically diverse peoples. But unfortunately, the level of educational attainment varies significantly across some of these groups. Past research in economics and sociology has attributed this disparity in achievement to income differentials and changing family structures. It is yet to be determined if cultural values play a major role in the unequal opportunities available to these minority youth.

My research focuses on comparing four prominent population groups in the United States--whites, blacks, Hispanics and Asians-- to determine if socioeconomic background and other intervening factors such as ability and educational aspirations take on culturally different meanings for each group. A sample of 5806 youth between the ages of fourteen and eighteen in 1979 are drawn from the National Longitudinal Survey of Youth. The statistical method of Ordinary Least Squares regression analysis is used to determine the extent that their educational attainment in 1990 has met their earlier aspirations. This step will involve direct comparisons of educational attainment and aspirations between and within these groups.

THE RECURRENCE RELATION OF B-WAVELETS

Rumi Kumazawa and Tian-Xiao He*, Department of Mathematics, IWU

The study of wavelet functions is a relatively new area in mathematics. It is a topic of interest for both mathematicians and engineers, and applications can be seen in a wide area where Fourier transforms were used traditionally.

The wavelet functions can be used to perform the decomposition in L^2 space, the collection of all square integrable functions. This can be done with the aid of compact support functions called the B-spline functions. The B-splines act as scaling functions in order to construct specific wavelet functions - the B-wavelets.

B-spline functions as piecewise polynomials with compact supports can be relatively smooth, and their Fourier transforms possess some properties like the Dirac Delta functions. Thus B-wavelets as the dilations and translations of B-splines can be used to reproduce and to analyze signals both in the local time and local frequency domains. In addition, we can expect to find a recurrence relation of the B-spline functions with different order. Hence B-wavelets of any order can be constructed successively from the lower order ones.

My project is on constructing B-spline functions and B-wavelet functions by their recurrence relations. A program was written in Pascal in order to calculate the Bernstein-Bezier coefficients of the B-spline functions of different order, and the graphs of these functions were drawn using Mathematica. From these coefficients of the B-splines, the coefficients of corresponding B-wavelength functions were found.

NEUROLOGICAL EVIDENCE FOR FRONTAL LOBE INVOLVEMENT IN SERIAL VISUAL SEARCH

Shayne Kuretski and Johnna Shapiro*, Department of Psychology, IWU.

This experiment explores the role of the frontal lobes in attentional tasks. Treisman's (1980) theory of feature integration divides attention into a serial process requiring directed attention and a parallel process which is pre-attentional. Research has shown that young children and older adults have greater difficulty than young adults with serial but not parallel processing. Knowing that both children and the elderly have frontal lobe deficits, perhaps these lobes control serial searches. The inhibition deficit theory suggests this outcome by proposing that people with frontal lobe damage are unable to efficiently inhibit distracting stimuli. Using people with brain damage localized in the frontal lobes could verify this hypothesis. 10 frontal lobe patients, 10 elderly adults and 10 college students will be tested with a task similar to that used by Plude and Doussard (1989). For each trial the subjects' reaction time will be measured as they decide on the presence or absence of a sideways T in three different conditions that have either 5, 10 or 15 stimuli on the screen. In the simple condition subjects will verify the presence or absence of the target in an array of upright P's. In the conjunction condition half the distractors are sideways P's and the other half upright T's. In the unconfounded condition two distractors are sideways P's and the rest upright T's. Each subject will complete 288 trials, half with the target absent and half with target present. Using a 3 factor analysis of variance it is expected that all subject types should perform equally in the simple condition since it only requires parallel processing which is not believed to be controlled by the frontal lobes. Frontal lobe patients and elderly adults should react significantly slower than college students in the conjunction condition since it is a serial process, and this difference will increase with the number of stimuli present. In the unconfounded condition, a mainly parallel search task, subjects should again perform equally with minimal differences at larger display sizes. If the frontal lobe patients perform as expected then it can be suggested that frontal lobe functioning may be responsible for changes in serial processing across the life span.

CIRCADIAN RHYTHMS AND THE VARIABLE INTERVAL RESPONSE FUNCTION

Karen M. Lionello, Charlotte A. LaMarche, and James Dougan*,
Department of Psychology, IWU

There has been considerable controversy over the empirical form of the function relating response rate to reinforcement on simple variable-interval (VI) schedules. Some studies have found monotonic functions, such as those predicted by theories based on the matching law. Other experiments have found bitonic functions, such as those predicted by economic and regulatory theories. Currently, the variables responsible for these differences are unknown. The present experiment attempted to discover what role circadian rhythms have in determining the response function. In particular, the experiments examined whether tight circadian entrainment might produce bitonic functions because reinforcers are "predictable" under such circumstances, while the absence of circadian entrainment might produce monotonic functions because such situations force the organism to behave opportunistically. Six rats were conditioned to press a bar for food on three VI schedules (7.5, 30, and 480). Half of the rats were conditioned at one of three variable times each day (8:00 a.m., 11:00 a.m., or 4:00 p.m.). Then, the conditions were counterbalanced across subjects. Rats that were previously conditioned at varying times were conditioned at a fixed time and those previously conditioned at a fixed time were conditioned at varying times. The results indicated bitonic functions in five out of six rats. However, when data were analyzed according to between interval feeding lengths, bitonic functions became increasingly more monotonic as the time interval decreased. Presently, experiments are being conducted in which the light-dark cycle of the rats' normal day has been disrupted to further examine the effects of circadian rhythms.

TOWARD AN UNDERSTANDING OF ALZHEIMER'S DISEASE III:
THE EFFECTS OF BETA-AMYLOID 1-42 ON THE RETENTION OF
A SPATIAL TASK IN MALE RATS

Alex McCampbell, Wayne A. Dorman*, Departments of Biology and Psychology, IWU

Alzheimer's disease is characterized neuropathologically by neurofibrillary tangles and neuritic plaques. One of the key components of the neuritic plaques is a 4 kd protein called β -amyloid. In humans, β A exists in varying lengths of amino acids, ranging from 39 to 43 amino acid residues in length. While recent studies have demonstrated that β A(1-40) is toxic to cultured cells, with amino acids 25-35 apparently mediating the cell death, there remains somewhat of a controversy as to the effectiveness of the protein to cause cell death "in vivo" in rats. One issue that has been discussed at length is a methodological one. For example it has been proposed that β A(1-40) protein aggregates very rapidly in most solvents thereby precluding reliable intracerebral injections. Recently, the 42 amino acid residue form of β A has been purified and synthesized by Dr. Tony Giordano and his coworkers at Abbott Laboratories. Apparently this form has a much slower rate of sedimentation, thus increasing the probability of successful injections. In an attempt to further explore the effect of β A on memory we bilaterally injected β A(1-42), a scrambled form of the peptide, or DMSO, into the dorsal hippocampus of male rats. The effects of these injections were assessed on animals that had acquired a spatial learning task which consisted of entering arms on a radial arm maze in three consecutive trials. We injected .5 microliter of β A(1-42), a scrambled version of the peptide, or the vehicle (DMSO) alone into the dorsal hippocampus. After surgery, the animals were allowed to recuperate and then were tested on the maze again. We recorded the session latency, the latency to first choice, the number of correct choices, the number reference memory error, the number of correct and incorrect errors, and the total number of choices. In addition, we calculated the percent of choices that were correct, the average choice latency, and the total number of errors. After two weeks of testing, we removed the bait from three of the arms and baited the three arms that were previously unbaited. After three days, all but two of the arms were left unbaited. This was done to try and delineate between those animals that were using procedural memory and those using declarative memory, which is presumably dependant on the hippocampus. The data were analyzed with an ANOVA. The rats were perfused after testing and histologies are currently being completed. Preliminary analysis revealed no significant difference between any of the three groups. This supports previous findings that β A alone may not be enough to cause a significant behavioral deficit.

THE INTEGRATION OF BANKING SYSTEMS IN THE EC

Heidi Munson and Margaret Chapman*, Department of Economics, IWU.

The 1993 Second Coordinating Banking Directive outlined the plan for integrating banking systems in the European Community (EC). Banks are free to branch wherever they want in the EC, and must abide by the rules of their home country. The purpose of this paper is to predict which countries' banks will be most profitable after integration; specifically, those countries whose banks have previous experience operating in an atmosphere of minimal regulation should be most profitable after integration. Bank profits of EC countries are tested to determine their relationship to various regulation variables, using data from 1985 to 1989. The paper concludes that those countries' banks which were less heavily regulated were most profitable, confirming the hypothesis.

HOW DOES EXPORT COMPOSITION AFFECT GROWTH IN DEVELOPING COUNTRIES ?

Franklin N. Nnebe, Department of Economics, Dr. Pam
Lowry*

Exports of developing countries are recognized as a source of valuable foreign exchange as well as an area of additional productive activity. A few developing countries have based a large part of their economy on export production and have accomplished rapid and sustained growth. This has caused wider support for the idea of trade as an integral part in development. Recently, the literature has examined whether, in addition to or aside from the large share of exports to GDP, the composition of exports was also a vital factor in distinguishing the superior growth performances of these few countries relative to that of the majority of developing countries. Available empirical studies have proxied this factor by using countries classified as either 'manufactured-oriented' or 'primary-oriented'. Their results have largely urged further investigation on this newer issue. This purpose of this study then, is to seek more conclusive evidence on the importance of export composition for growth in developing countries. The model proposes that with all other factors constant, an increase in the manufactured share of production over time should strongly and positively encourage growth, as theorized in the literature. The countries selected are carefully chosen according to region, inward/outward trade bias, and export composition, in order to allow for a 'balanced' sample. In addition, the export-based economies of South-East Asia are excluded from the sample due to their high share of exports in GDP. The relevant period for the study is 1970 - 85.

ADVERTISEMENTS: MIRRORS OF THE SOUL

Laurel Nolen, Department of Foreign Languages,
IWU, Marina Balina*

Recent political changes in the former Soviet Union have led to important social changes, including the Americanization of social and cultural values. This study focuses on Russian television and print advertising, viewing it as a reflection of these changes.

In the Communist era, central planning and a state-run economy changed the format of advertising. Advertisements simply stated which goods a particular store was carrying on a particular day. No competitive language was used; none was necessary, since the state had no competitors. The rise of a market economy in present-day Russia has resulted in a new age in advertising, as well as a new approach to it.

The lack of precedent for competitive advertising has had important consequences for Russian advertisers. They have had to look to America and other Western countries for instruction and example. In some cases, they have adapted American advertisements and used them in Russia. More important, though, is the freedom, due precisely to this lack of precedent, to pick and choose what messages and images are useful and to leave out those that are not; to advertise in a way which uniquely reflects the values of both the advertiser and the intended audience.

Advertisements are analyzed in terms of structure, unusual or irregular language (indicative of a cultural import), extra-linguistic content (dress of actors, music, etc.), similarity (or dissimilarity) to American advertisements, and overall reflection of contemporary societal changes.

THE IMPLICATIONS OF COGNITIVE CHANGE
IN THE TREATMENT OF PANIC DISORDER WITH AGORAPHOBIA

Lisa M. Nowak, Department of Psychology, IWU and
Timothy J. Bruce*, Department of Psychiatry, UICOMP

The study was an extension of a previous study done by Spiegel, Bruce, Falkin-Gregg, and Nuzzarello (in press), the latter of which tested whether cognitive behavior therapy assisted alprazolam discontinuation in panic disorder patients. The focus of cognitive behavior therapy in relation to benzodiazapine discontinuation placed great emphasis on changing cognitive biases during the treatment process. The present study investigated whether groups differed on cognitive factors associated with panic disorder (eg. catastrophic misinterpretations, sensitivity to bodily sensations, and a feeling of lack of control over emotions and situations) and whether that change predicted discontinuation. The results showed the alprazolam plus cognitive behavior therapy group had significantly greater cognitive change compared to the alprazolam only group. Furthermore, cognitive change was involved in predicting which subjects were able to successfully discontinue alprazolam treatment. Implications for benzodiazapine treatment in conjunction with cognitive behavior therapy are discussed.

THE EFFECT OF PREMIUM OFFERS ON CONSUMER BUYING DECISIONS

Amy R. Parker and Johnna Shapiro*, Department of
Psychology, IWU and Beer Nuts, Inc.

Premium programs are common promotional tools, but have received very little empirical study. The purpose of this study was to determine the effectiveness of a premium program done by Beer Nuts, Inc. A mail survey was sent to the first 250 respondents to the premium offer. It is expected that most of the subjects will be first time consumers, will switch brands if a premium were offered, and will be motivated to purchase a product they normally would not to obtain a desirable premium item. Additionally, it is hypothesized that most respondents will continue to buy Beer Nuts Brand Snacks now that they have received the premium. The results of this study will not only assist Beer Nuts, Inc. to plan further premium promotions, it will also lead to further premium research in the areas of psychology and marketing.

QuickAdvise

Greg Pengiel and Dr. Lisa Brown, Department of Computer
Science, IWU

Both faculty and students encounter an annoying dilemma around the middle of each semester... choosing next semester's courseload. One of the principal uses of a computer is to speed up and maximize the ease of recurrent tasks. Therefore, I decided to research, design, and construct a software application for Windows to do most of the work. I carefully determined what the application should be capable of by interviewing a number of people who could benefit from QuickAdvise. The program will be abstract enough to be used by schools other than Illinois Wesleyan. A separate tool is part of the application which allows the user to design and modify the school's majors. Also, it keeps track of individual students' records and academic histories. Finally, QuickAdvise can show the users what classes are needed to finish majors, minors, and general education requirements. Then, I had to research the variety of development platforms available in order to choose the most applicable. I decided to use Microsoft's Visual Basic due to its flexibility. Next, I produced a System Design Specification and a User Interface Specification. The Interface was constructed and coding soon followed. After completing sub-system testing, the major bugs were attended to. The application is now ready for system test and subsequent distribution.

TOWARD AN UNDERSTANDING OF ALZHEIMER'S DISEASE VII:
THE EFFECTS OF β A(1-42) AND IBOTENIC ACID ON THE
RETENTION OF A SPATIAL LEARNING TASK IN RATS FOLLOWING
MULTIPLE INJECTIONS INTO THE HIPPOCAMPUS

Jason Pequette and Wayne Dorman*, Department of Psychology, IWU

Neuropathologically, Alzheimer's disease (AD) is characterized by neuritic plaques and neurofibrillary tangles. Evidence has suggested that a protein called β -amyloid (β A) is a major component of the neuritic plaques and may play a role in the neurodegeneration seen in AD. The cellular mechanisms by which β A induces neurotoxicity, however, are still unclear. Recent evidence suggests that the aggregational state of β A may be relevant to its neurotoxicity. Whether portions of the β A protein or the entire sequence produces neurotoxicity in neurons, however, remains a controversy. Still another controversy is whether β A is directly neurotoxic to neurons or whether it increases the vulnerability of neurons. Recent evidence reported by Dorman, Kang, McCampbell and Kang, that injections of β A(25-35) with a low dose of ibotenic acid into the hippocampus did disrupt the acquisition of spatial learning in the rat, supports the vulnerability hypothesis. They suggest that the synergistic effect between β A and ibotenic acid may have produced the neurotoxic effect. In light of recent evidence, reported at this conference, that injections of β A(1-42) alone did not disrupt the retention of a spatial learning task, in this study we assessed the increased vulnerability hypothesis by coinjecting β A(1-42) with a subthreshold dose of ibotenic acid into the hippocampus of male rats. Another problem related to β A's neurotoxicity may concern the extent of hippocampal damage it produces. Therefore, we will assess the effects of multiple injections of β A(1-42) and ibotenic acid into the hippocampus of male rats. The results will be presented at the conference.

TOWARD AN UNDERSTANDING OF ALZHEIMER'S DISEASE I:
THE EFFECTS OF BILATERAL INJECTIONS OF BETA AMYLOID (1-42)
ON SPATIAL LEARNING IN THE MALE RAT

Anthony R. Peterson and Wayne Doman*, Department of Psychology, IWU

Alzheimer's Disease is a neurodegenerative disorder that is characterized by neurofibrillary tangles (NFT) and neuritic plaques (NP). These NP are comprised of a 39 - 43 amino acid peptide : beta amyloid (β A), which seem to selectively target the basal forebrain and hippocampus of the brain. A recent study by Kang, Doman, McCampbell, Kang (Neuroreport, 1993) stated that β A(25-35), the hypothesized neurotoxic segment of the protein, plus a subthreshold dose of an excitatory amino acid, ibotenic acid (IBO), produced behavioral deficits on a visual-spatial task in a rat similar to the behavioral deficits in human Alzheimer's subjects. The same study reported that β A(25-35) alone did not produce any behavioral deficits. Presently there are several forms of β A that are suspected of forming NP. Research on the effects of these different fragments of β A is needed to discover their potential role in the etiology of Alzheimer's. Therefore, in this study, we assessed the behavioral effects of β A(1-42) following intracerebral injections into the dorsal blade (CA1 region) of the hippocampus in the male rat. We used three groups of animals in this study. One group consisted of animals injected with β A(1-42) in a dimethylsulfoxide vehicle (DMSO). The second group was comprised of animals that were injected with a scrambled β A(1-42) peptide in DMSO. The third group, the control group, consisted of animals injected with DMSO only. All of the injections were targeted at the dorsal blade of the hippocampus. The animals were pretested for two weeks on an eight arm radial arm maze, a task that tests for visual-spatial learning, in which five of the arms were always baited. We tested the animals for two weeks after the surgery and found no difference between any of the groups in their ability to learn a visual-spatial task. Another study is currently examining the effects of β A(1-42) with IBO.

DDE LEVELS IN MIGRATORY SONGBIRDS.
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Although DDT has been banned in the United States since 1972, it is exported to other countries where it is used extensively as a pesticide. Population declines in North American migratory passerines (songbirds) have been observed, and could possibly be caused in part by high DDE levels obtained at winter migration areas in Central and South America. Brain tissue from migratory passerines will be extracted, and baseline DDE levels will be measured using gas chromatography/electron capture detection.

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THE WITHIN-SESSION EFFECTS OF FOOD DENSITY ON THE BITONIC FUNCTION

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Within-session patterns of responding have typically been ignored for research in which response rates are the dependant variable. Recently, however, such within-session changes have been found to be significant (McSweeney, 1992). Two experiments examined the effects of food density on within-session responding. The subjects were six Long-Evans Hooded rats. In the first experiment, a one hour baseline phase with a multiple VI 30-30 reinforcement schedule was conducted in a standard operant conditioning chamber. In the experimental phase, rats were given pre-session feedings in an amount equal to food received in cumulative ten minute blocks of the baseline phase. Six such pre-feeding conditions were administered, and subjects were tested for ten minutes immediately after the consumption of the pre-feed. The within-session effects of food density were directly comparable to baseline rates. The second experiment, in progress, will administer the pre-feed conditions inside the chamber with the bars retracted, and the remainder of the session subjects will be allowed to respond. This will examine the effects of food density on the response function as reinforcement is received at the same rate of the baseline phase while the opportunity for response is absent during the pre-session feeding. Together, the studies suggest that food density has a significant effect on the response function within the session.

THE ROLE OF STIMULI DEPENDENT COMPONENT DURATION ON WITHIN-SESSION RESPONDING

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Previous research in the area of within-session responding has shown that responding varies within a given session. Results have specifically shown increasing, decreasing, and bitonic function in which bitonic is predominant. The present experiments examined the effects of altering stimuli dependent component durations on responding within sessions. Six female rats pressed a bar for food reinforcers on a multiple VI 30 VI 30 schedule in daily one hour sessions. Components, consisting of alternations between an illuminated and a non-illuminated stimulus light, served as the independent variables. After taking a baseline with a component length of five minutes, the subjects were assigned to one of two experimental groups. The first group was exposed to a component length of four minutes, and the second group was exposed to a component length of six minutes. It was found that the alternating stimulus light did have an effect on within-session responding.

DNA FINGERPRINTING: ITS APPLICATION TO PARENTAGE STUDIES IN
HOUSE WRENS (Troglodytes aedon) AND ITS EXTRAPOLATION TO OTHER
ORGANISMS

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It has been shown for many species of birds that all of the nestlings in a given nest are not necessarily related to the parents. Such "multiple parentage" may result from intraspecific brood parasitism (when a female lays an egg in another female's nest), extra-pair fertilizations (when a male or female mates successfully with a parent that does not attend the nest), or rapid mate switching (when the original male is replaced by a different mate, who then achieves some paternity in the resulting brood). Consequently, ecological studies of avian reproductive success that simply count the number of surviving offspring in a given nest may not accurately measure the actual reproductive success. Our study is part of an ongoing experiment to determine levels of multiple parentage in a population of house wrens (Troglodytes aedon) by using the technique of DNA fingerprinting. This technique utilizes restriction enzymes to cut DNA at specific base pair sequences, creating fragments of different sizes. When these fragments are labeled with a radioactive probe, a "bar code" of bands unique to each individual bird is generated (i.e. a fingerprint is formed). DNA for these analyses was extracted from the blood of adult and nestling house wrens. We have preliminary evidence that multiple parentage does occur in this population of house wrens breeding in nest boxes in central Illinois. In addition, we made DNA fingerprints from a number of other organisms to see if this technique could be successfully used in unmodified form on tissues other than blood. Only small amounts of DNA were extracted from these tissues in comparison to DNA extracted from wren blood, but these samples were still free of contaminating proteins. Those fingerprints made from plant tissues did not work, but we had some success with the fingerprints made from various animals. This suggests that the technique could be extrapolated without modification to other animals, but not to any plants, to answer similar questions of parental identity.

AN EMPIRICAL STUDY OF COVERED INTEREST
ARBITRAGE MARGINS DURING THE EUROPEAN MONETARY CRISIS

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Interest parity in international financial markets exists when the interest rate differential between two countries is exactly offset by the forward exchange premium/discount. If at any moment the interest parity condition is not satisfied, traders can execute covered interest arbitrage. Covered interest arbitrage entails a series of four transactions in the currency and securities markets which results in a practically riskless profit. Although traditional economic theory predicts that the opportunities will be wiped out as individuals take advantage of the situation, covered interest arbitrage margins (CIAMs) have been observed to exist over extended periods of time.

Previous research in the area has attempted to rectify the discrepancy by identifying factors outside the basic arbitrage equation which work to negate profit opportunities. The most dominant of such factors in the literature have been transaction costs, partly because they are quantifiable. Other factors, such as political/financial center risk, timing problems, and imperfect elasticities of demand and supply have been explored as well, but are more difficult to pin down empirically.

My research attempts to show that transaction costs alone are not enough to explain away CIAMs. Rather, I wish to show that the political/financial center risk plays an important role in establishing effective interest parity. The focus is on the time period of summer 1992, when the European Monetary System crisis occurred, bringing along heavy speculation, volatility, and intervention in currency markets. A higher political/financial center risk for London is hypothesized to exist during this time period, producing margins that cannot be explained away by simple transaction costs. To achieve our goal, weekly calculations of CIAMs are computed along with proxies for transaction costs. To expose political/financial center risk, a traditional as well as a non-traditional pair of securities is used. It is hoped that data from the non-traditional pair coupled with transaction costs will explain a higher proportion of the observed CIAMs than the traditional pair/transaction costs combination, and thus reveal the importance of considering political/financial center risk in establishing market efficiency.

IS EMPTYING REALLY EMPTINESS?
A PLURALIST PERSPECTIVE ON CHRISTIANITY AND ZEN BUDDHISM

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Since the turn of the century, with the increase of global communications, public awareness of the major world religions has increased. Two perspectives on the problem of religious plurality have arisen in Christianity: those who believe all world religions bear the same basic truth disguised in many traditions, and those who want to profess faith in Jesus Christ as the only true and saving religion. We might call the former position that of the inclusivist, and the latter position that of the exclusivist. For the inclusivist, as it were, there are many paths on the same mountain all leading to the summit of enlightenment or salvation. The exclusivist professes that only one true path exists, but all who follow it will find liberation. One question that arises when considering these two perspectives is whether Christianity is unique or whether it shares the same teachings with other world faiths? The goal of this paper is to consider this question by examining the relationship between Christianity and Zen Buddhism. Through comparison of the theological concept of emptying/emptiness and of the practical issue of the life of the religious aspirant, I will seek to determine if Christianity proves itself to be unique. After close examination of these two issues, I will suggest that what appeared to be similar on the surface was actually quite different. I will argue that Christianity is indeed unique and different from other world religions including Zen Buddhism. However, although my research calls into question the inclusivist belief that all faiths profess the same truth, it is not my aim to return to the exclusivist belief that only those who follow Christianity will find salvation. The solution to me appears to lie in a third position: pluralism. All religions do not need to profess the same truth in order to be true. Salvation and/or enlightenment may be found along a variety of paths. Thus, while each path emphasizes unique truths, these truths need not be mutually exclusive. My paper will conclude by considering the ramifications of this third, pluralist perspective.

DANCING AGAINST THE OPPRESSION: THE THEATRE OF THE HOLOCAUST

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" I thought at first that the excess of happiness would make me explode like an over-filled balloon. I could not contain it. I jumped, threw myself on the beds, kicked my legs in the air and laughed aloud, and still the unbearable joy mounted inside... It was indescribable. One could only shout and dance about it."¹ Such was a young girl's response to the discovery there would be a theatrical performance in Theresienstadt, the Nazi transit camp where she was interred. At a time of desperation and despair the inhabitants of the ghettos and concentration camps turned to theatre as a source of sustenance. It was used to educate, preserve traditions, escape, and resist. An examination of these theatrical activities and the plays dealing with these events allows us a greater understanding of this dark time in our history that is so difficult to comprehend. It shows us that theatrical arts do play an important role in society and in history. Even in an impossible situation we can maintain our individuality and dignity, and that even the weakest of voices can never be silenced.

¹Eisen, George. Children and Play in the Holocaust. Games Among the Shadows. University of Massachusetts Press: Amherst, Mass., 1988, pgs. 73-4.

YR HEN IAITH BARHAU:
VIEWS OF "THE WELSH QUESTION"

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Dr. Matthews originally assigned me the task of explaining some aspect of the Welsh national identity to an audience of people in my hometown-- a place where most of the people I've met are unaware that there's a difference between Wales and England. I chose the Welsh language and Trinity people's views of it, with the intention of turning it into a feature article for the local paper. However, it quickly became apparent that I was going to find a lot more material than I could fit into a single article; I kept the feature voice so that it might be able to be split up into a series of articles.

In this study I conducted five interviews (four individuals, one small group) about people's backgrounds and their attitudes toward the Welsh language. Trinity College is officially bilingual and has been for years, so one would expect a greater level of acceptance of/support for the Welsh language; I didn't find anyone who argued in favor of actively exterminating it. However, I met almost every other attitude on the spectrum-- including total apathy.

There were five broad patterns to people's backgrounds: Welsh who speak English only, Welsh who speak English and Welsh, English who speak English only, English who speak English and Welsh, and those whose backgrounds don't have any bearing because they have no opinion for it to affect. Within those categories there are some dramatic contrasts of opinion-- for example, two of the people in the Welsh who speak English only category hold views which are almost diametrically opposed. There are no clearly-defined opinion patterns; although one would expect Welsh-speakers to support the language and English-speakers to oppose it, half of the interviewees fell into categories opposite to the expected views.

While the Welsh language was generally seen as something to be supported in one way or another, there was no common ground on how far that support should go. Nobody agreed with everybody else, and few agreed with most. The debate over the Welsh language continues in Carmarthen and in Wales as a whole, as it has for at least five hundred years.

EFFECTS OF INCIDENTAL TEACHING ON ANTECEDENT AND CONSEQUENT BEHAVIOR

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Several studies indicate that incidental teaching is a successful behavioral intervention for increasing social behaviors in children with developmental disabilities. This technique focuses on accurately identifying reinforcers by interrupting initiation towards a desired object and making further interaction with that object contingent upon a desired response. Therefore, no artificial reinforcers are used and teaching occurs in the child's natural environment. Disequilibrium theory, proposed by William Timberlake and Valeri Farmer-Dougan in 1991, suggests that stronger reinforcement effects will be produced as the disruption of baseline rates of child-initiations increase. However, at extremely high rates of interruption, reinforcement rates are expected to satiate. This study determines the magnitude of reinforcement effects when varying degrees of incidental teaching are used with disadvantaged preschoolers in a Head Start classroom.

THE EFFECT OF DISINTERMEDIATION OF THE BANKING SYSTEM ON THE MONEY MULTIPLIER

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The purpose of this research project is to determine how the shift from bank to non-bank lending affects the Federal Reserve Bank's ability to control the money supply. Traditional monetary policy holds that as the monetary base is increased through an expansion of bank reserves, the quantity of money in the economy should also increase. The transmission channel through which bank reserves becomes money is the money multiplier. This study involves a time series study of the effect of the disintermediation of banking on the money multiplier.

Based on the model developed by Garfinkel and Thornton of the St. Louis Federal Reserve Bank, this study tries to further explain changes in the currency demand deposit ratio based on the hypothesis that alternative sources of borrowing and lending have become substitutes for currency and demand deposits. The currency leakage from the money multiplier can be partially explained as a result of disintermediation. According to the theory that I have developed, as the amount of bank disintermediation increases there should be a corresponding decrease in the money multiplier as a result of increased leakages in the form of a larger currency to demand deposit ratio.

CHANGES IN RESPONSE RATE:
IS THE STANDARD OPERANT CONDITIONING UNIT REALLY STANDARD?

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Skinner (1938) first described the "standard" operant conditioning unit, or Skinner box. However, there has been controversy regarding whether the unit is actually standard. The present study examined whether different types of "standard" Skinner boxes would produce different results. The subjects were six female Long Evans rats which were food deprived to 80% of their normal body weight. They were tested in two different operant chambers- one was a Gerbrands Corporation model G7410, and the other was a BRS/LVE Inc. model RTC-020. The subjects were randomly assigned to run on four different VI schedules (VI 7.5s, 15s, 30s, and 240s) in blocks of 12 days per schedule. Sessions lasted for ten minutes. The results themselves were largely inconclusive: no significant differences were achieved across the Skinner boxes, but there were inconsistencies in individual performances. Further studies using longer sessions are currently in progress.

β -AMYLOID (1-42) AND ITS ROLE IN DEVELOPING AN ANIMAL MODEL OF ALZHEIMER'S DISEASE

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Alzheimer's disease is a neurodegenerative disorder characterized by neurofibrillary tangles and neuritic plaques. The major component of neuritic plaques is β -amyloid. In humans, β -amyloid is a chain of amino acids varying in length from 39 to 43. Current studies have shown that β -amyloid (1-40) is toxic to cells *in vitro*, with the 25-35 chain of amino acids supposedly being responsible for the cell death. However, the ability of the protein to cause cell death *in vivo* is still being questioned. One problem is that the (1-40) form has been found to aggregate very rapidly in most solvents, which could prevent a successful injection of β A into a rat. Recently, the (1-42) form has been purified and synthesized. As opposed to the (1-40) form, the new 42 amino acid sequence has a slower rate of sedimentation, which increases the likelihood of an effective injection. In order to determine the effect of β A (1-42) on spatial tasks, 0.5 microliters of the peptide were injected bilaterally into the dorsal hippocampus of male Long Evans rats. Control groups were also utilized. The first control group consisted of injections of a scrambled version of the peptide, the second group being the vehicle (DMSO) alone. The animals, which had been pretrained on a radial arm maze, were allowed to recuperate from surgery and were then tested on the maze again. The maze consisted of eight arms, five of which were always baited for a particular animal. Session latency, latency to first choice, number of correct choices, number of reference memory errors, number of correct and incorrect errors, and the total number of choices were recorded for each animal. Items that were then calculated included the percent of correct choices, the average choice latency, and the total number of errors. Testing continued for two weeks, after which the reinforcers from three of the arms were removed and shifted them to the three arms which had previously been unbaited. Three days later, all reinforcers were removed except for the two arms which had been baited for both of the previous configurations. These two reconfiguration procedures were done in an attempt to differentiate between animals using procedural memory and those relying on declarative memory, which is controlled by the hippocampus. The data was analyzed using ANOVA. The rats were perfused after testing, and the histologies are currently being completed. There was no significant difference between the three groups. These results suggest that injections of β A do not affect the retention of previously learned spatial tasks in the rat. Further studies will assess the affects of bilateral injections of β A (1-42) into the hippocampus on the acquisition of a spatial learning task.

THE THEORY OF PROSAICS IN HISTORY AND LITERATURE: LEO TOLSTOY AND LION FEUCHTWANGER

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The aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something - because it is always before one's eyes.)... And this means: we fail to be struck by what, once seen, is most striking and most powerful. (Ludwig Wittgenstein)

No historian would claim that his works are finer art than the works of an artist. But does the artist recreate the historical epoch better than the objective historian? Generally historians assume that only significant moments make history. In describing the life of a people they tend to focus on monumental events and grand figures, neglecting ordinary events of everyday life. These ordinary events and people are disregarded as historically irrelevant. Leo Tolstoy argued that historians have no reliable way of assessing significance or of formulation generalizations. He rejected the idea that history consists of only celebrated events. According to Tolstoy "lives consist of a series of almost imperceptible choices; it is the myriad infinitesimally small decisions we make and the aggregate of habits we acquire from moment to moment that shape selves and constitute personal identity". Since life is so complex and diverse, the most important events in history, culture and psyche may be the most ordinary and prosaic events. Tolstoy declares that it is in the rhythm of everyday life, in the ordinary and unnoticed, that the meaning of life in history is to be found. Lion Feuchtwanger, the German historical novelist, is greatly influenced by Tolstoy. He incorporates Tolstoy's prosaic style in his historical novels, specifically in the *Josephus* trilogy.

In my study of Tolstoy's novel *War and Peace* and Feuchtwanger's historical trilogy *Josephus*, I investigate the proportion of significant and insignificant events in the description of historical epochs. In my paper I will explore the theory of *prosaics*, presented by an American scholar Gary Saul Morson, and apply it to the historical novels of Tolstoy and Feuchtwanger. Morson argues that in these novels the writers attempt to redirect our attention from great striking dramatic events toward the complex process of daily life, "toward richly trivial events hidden in the diffuse light of plain view".

EFFECTS OF EXPOSURE TO STRESS LEVELS OF GLUCOCORTICOIDS ON THE
RETENTION OF A SPATIAL TASK IN RATS INJECTED BILATERALLY WITH
BETA-AMYLOID INTO THE HIPPOCAMPUS.

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The pathology of Alzheimer's disease is characterized by neuritic plaques and neurofibrillary tangles. The core component of the plaques is an amino acid named Beta-amyloid. A recent study done by Dorman, Kang, McCampbell, and Kang (1993) reported that bilateral injections of Beta-amyloid and ibotenic acid into the hippocampus significantly impaired the acquisition of a spatial learning task in rats. Dorman et al suggest that the results seen in their study maybe due to Beta-amyloid + ibotenic acid working synergistically via NMDA receptors to cause calcium dyshomeostasis. Another way that calcium dyshomeostasis occurs in the brain is via glucocorticoids. In a study done by Sapolsky (1985), exposure to stress levels of glucocorticoids exacerbated Kainic acid damage to hippocampal neurons, suggesting the possibility that glucocorticoids may endanger neurons by making them more vulnerable to outside toxic insults. Therefore in this study we assessed the effects of glucocorticoids on the retention of a spatial task in animals. The animals were pretrained on an 8 arm radial maze for a period of two weeks. The maze contained 5 baited arms and 3 unbaited arms. One week prior to and one week following bilateral intracerebral injections of Beta-amyloid (1-42) into the dorsal hippocampus animals were either adrenalectomized or injected daily with corticosterone (glucocorticoid) or sesame oil (vehicle). Following treatment animals were tested on the radial arm maze for 14 days and measured for correct choice (number of baited arms entered), reference memory error (number of unbaited arms entered), correct error (reentry into a baited arm) and incorrect error (reentry into an unbaited arm). Statistical analysis will be preformed on the data using oneway ANOVA with the number of days as the repeated measure and the treatment conditions as the between group measure. The results of this study will be presented at the conference.

MUCH ADO ABOUT NOTHING: AN INTER CULTURAL APPROACH TO THE WORLD OF PROVERBS

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Proverbs are generally viewed as witty sayings conjured up by wise sages of ages past. Upon closer examination, however, one finds that they in fact belong to everyday speech and are often used unconsciously. When attention is focused on these curious aspects of our language questions arise. We find that proverbs actually provide us with many insights into not only English but foreign languages as well.

What kind of approach is appropriate in a foreign setting? When we try direct translation of the words, a proverb loses all meaning. Likewise, when we translate the meaning, inner structure and "the spice" of a proverb are often sacrificed.

The correct approach includes looking for similarities in the context in which the proverbs are used and the message they are trying to convey. This necessarily means considering culture, customs, and traditions, not simply language in and of itself. It is precisely this inter cultural analysis that I intend to make using proverbs from German and Russian languages as examples.

AN INVESTIGATION OF A SHIFT IN THOUGHT CONTENT IN SEXUAL DYSFUNCTION

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The present study was an extension of a study by Bruce, Barlow, and Jones (1989), and examined whether a cognitive shift from on-to-off-task thought occurred during sexual arousal, accounting for dysfunctional performance. This study examined the thought content and sexual response of sexually functional, (SFs; N = 10), and sexually dysfunctional, (SDs; N = 10) subjects during three levels of distraction, (no distraction, first level of distraction, and second level of distraction). As hypothesized, under no distraction, SFs exhibited the highest level of arousal and greatest number of on-task thoughts. As distraction increased, SFs showed a decrease in arousal and number of on-task thoughts, and an increase in the number of off-task thoughts. For SDs, results indicated that there was no change in arousal or number of off-task thoughts as distraction increased. However, the hypothesis that SDs would exhibit the lowest level of arousal and highest number of off-task thoughts was not confirmed. Implications for future theoretical and therapeutic investigations are discussed.

A POSSIBLE NEUROLOGICAL MECHANISM FOR AGE-RELATED
CHANGES IN THE FORMATION OF PROBLEM-SOLVING SET
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Studies of problem-solving set have shown no significant age differences in correct responses (Ransopher & Thompson, 1991). The current study investigates the effects of age on an anagram solution task designed to induce problem-solving set, with latency of response as the dependent measure. The inhibition-deficit view (Hasher & Zachs, 1988) suggests that elderly subjects may be less susceptible to the effects of problem-solving set. Dempster (1992) suggests that these inhibitory processes are associated with the frontal lobes. Alternatively, the perseverative characteristics seen in frontal lobe patients may suggest that the deterioration of the frontal lobes with age will cause the elderly to be more susceptible to the effects of problem-solving set. Results indicate that undergraduates were more susceptible to problem-solving set than elderly subjects at set sizes of 12 anagrams, but at a size of 15, strength of set is strong enough to affect the elderly as well. These results support a possible neuropsychological role in the formation of problem-solving set.