Sixteenth Annual

CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

Thursday, April 20, 1995

University Business Center
California State University, Fresno

Plenary and Poster Sessions — 12:30 p.m.
Concurrent Sessions — 2:30 p.m.
Student Awards & Social Hour — 5:30 p.m.

SIXTEENTH ANNUAL CENTRAL CALIFORNIA RESEARCH SYMPOSIUM

PROCEEDINGS

Sponsoring Institutions

California State University, Fresno
University Grants and Research Office

University of California, San Francisco
Fresno-Central San Joaquin Valley
Medical Education Program

California School of Professional Psychology

Fresno City College

United States Department of Agriculture
Water Management & Horticulture Research Laboratories

Convened in the University Business Center
on the campus of
California State University, Fresno

April 20, 1995

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PREFACE

Welcome to the ***16th Annual Central California Research Symposium***.

From its inception, the purpose of this symposium has been to bring together investigators, students, and faculty from a variety of disciplines to share the results of their scholarly work. Through this opportunity for exchange, the continuation of these activities in the Central Valley is encouraged. It is hoped that all participants will gain new insights from this experience and that they will be enriched by learning about the interests of other scholars.

Abstracts for this year's event were reviewed and selected for presentation by a Program Committee appointed by the Symposium Planning Committee. In this review, the committee looked for a well-written abstract on a topic of scholarly merit which provided an introduction stating the purpose of the study, a brief description of the methods, a summary of results, and a statement of the conclusions reached.

This year *UCSF Valley Medical Education Foundation* has provided two cash awards for the best symposium presentation by a student--one for an undergraduate student and one for a graduate student. *California School of Professional Psychology* has provided one cash award for the best symposium presentation by a doctoral student.

Presenters and guests are invited to a social hour following the student awards which will be held in the University Business Center patio.

These proceedings are published as apermanent record of the work presented and also to stimulate ideas for future work and subsequent symposia.

PLANNING COMMITTEE

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO FRESNO-CENTRAL SAN JOAQUIN VALLEY MEDICAL EDUCATION PROGRAM

Malcolm F. Anderson, M.D.
Symposium Co-Chairperson

H. John Blossom, M.D.
Bruce Fujikawa, Dr.P.H.
Donna Hudson, Ph.D.
Harold Price, M.D.
Robert Wells, Ph.D.
Kent Yamaguchi, M.D.

CALIFORNIA STATE UNIVERSITY, FRESNO

Ric Brown, Ed.D.
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Ethelynda Harding, Ph.D.
Myron Hatcher, Ph.D.
Walter Loscutoff, Ph.D.
Mark Mayse, Ph.D.
Robert Palacio, Ph.D.
Robert Ware, Ph.D.

CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY

Merle Canfield, Ph.D.

FRESNO CITY COLLEGE

Edward Lindley, Ph.D.

U.S. DEPARTMENT OF AGRICULTURE WATER MANAGEMENT AND HORTICULTURE RESEARCH LABORATORIES

Joseph Smilanick, Ph.D.

EVENT AND PROCEEDINGS COORDINATOR

Annette Kachadoorian, CSUF, University Grants & Research Office

CALIFORNIA STATE UNIVERSITY • FRESNO

OFFICE OF THE PRESIDENT

5241 North Maple Avenue
Fresno, California 93740-0048
(209) 278-2324

April 20, 1995

MESSAGE TO ALL RESEARCH SYMPOSIUM PARTICIPANTS

California State University, Fresno is pleased to serve as the host campus for the ***Sixteenth Annual Central California Research Symposium.***

This Symposium continues to provide a unique forum for the presentation and discussion of scholarly activities of interest to researchers throughout the Fresno community. The program for the Symposium reflects the ultimate goals of promoting interdisciplinary research, encouraging scholarly exchange on theoretical and pragmatic topics, and providing an opportunity for both students and research scholars to share common interests. Cooperative efforts such as these benefit the individual institutions involved and ultimately the public that we all serve.

We appreciate your participation in this Symposium, and it is my pleasure to extend my warmest welcome to our campus.

Sincerely,

John D. Welty
President

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

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SCHOOL OF MEDICINE
FRESNO-CENTRAL SAN JOAQUIN VALLEY
MEDICAL EDUCATION PROGRAM

2615 East Clinton Avenue
Fresno, California 93703
TELEPHONE: (209) 224-3235
FAX: (209) 228-6926

WELCOME

SIXTEENTH ANNUAL
CENTRAL CALIFORNIA RESEARCH SYMPOSIUM
PARTICIPANTS

Dear Friends:

I am delighted to welcome you all to the Sixteenth Annual Central California Research Symposium. Once again, the breadth of disciplines of our investigators provides us an index of the serious commitment to scientific investigation that exists in our community. The quality of research conducted in the Valley and the dedication of students and faculty alike can serve as an inspiration for all of us.

Sincerely,

H. John Blossom, M.D.
Associate Dean

CSPP
CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY

BERKELEY/ALAMEDA
FRESNO
LOS ANGELES
SAN DIEGO
PRESIDENT'S OFFICE

FRESNO CAMPUS
1350 M STREET
FRESNO, CA 93721-1881
TEL. (209) 486-8420
FAX (209) 486-0734

MARY BETH KENKEL, Ph.D.
CHANCELLOR

April 14, 1995

Dear Symposium Participants:

The California School of Professional Psychology is pleased to once again participate a sponsor of the 16th Annual Central California Research Symposium.

This collective endeavor of scholarship and research provides each participating institution with a rich reservoir of current scientific findings to broaden knowledge and understanding.

It gives us great pleasure to be a part of this exciting event and we extend our good wishes to all participants.

Sincerely,

Mary Beth Kenkel

Mary Beth Kenkel, PhD
Chancellor

FRESNO CITY COLLEGE
1101 East University Avenue • Fresno, California 93741
Telephone (209) 442-4600

OFFICE OF THE PRESIDENT

April 11, 1995

Symposium Participants
Central California Research Symposium
University Grants and Research Office
California State University, Fresno
4910 N. Chestnut
Fresno, CA 93726

Dear Symposium Participants:

Fresno City College is pleased to continue as one of the sponsors of the Annual Central California Research Symposium. This cooperative venture not only advances the frontiers of knowledge, but leverages the research resources of each participating institution. Fresno City College is proud to be a partner in hosting this program, and extends best wishes to all participants.

Sincerely,

Brice W. Harris
President

sh

United States Department of Agriculture
Agricultural Research Service
Pacific West Area
2021 S. Peach Avenue
Fresno, Ca 93727

Horticultural Crops Research Laboratory
Telephone (209) 453-3000
Facsimile (209) 453-3088

April 3, 1995

Symposium Participants
16th Central California Research Symposium
Fresno, California

Greetings:

On behalf of the USDA, ARS, Horticultural Crops and Water Management Research Laboratories located in Fresno, I would like to extend a welcome to you for the 16th Central California Research Symposium. Fresno now has a large research community made up of scientists from state, university and federal sectors covering a multitude of disciplines (i.e., biological and physical sciences, agriculture, medicine). This Symposium provides an avenue for information exchange and possible lines of cooperative research among these scientists. It also provides an opportunity for the non-scientific community to "find out what's going on." I hope you take advantage of this opportunity to learn about research being conducted in the area. There also will be potential scientists at the symposium. Who knows, maybe you can steer them towards your area of expertise.

I hope your attendance and participation opens new horizons and provides new opportunities for you and your parent organization. If we can be of any assistance to you on agricultural matters, please do not hesitate to contact us.

Again, welcome to the Symposium and may your scientific endeavors and horizons increase in the future.

With best regards,

Patrick V. Vail

PATRICK V. VAIL
Laboratory Director/Location Coordinator
Supervisory Research Entomologist

ABBREVIATIONS

ADCC	Alzheimer's Disease Center of California
CSPP	California School of Professional Psychology
CSUF	California State University, Fresno
FCHSA	Fresno County Health Services Agency
FHS	Fowler High School
FMEP	Fresno Medical Education Program
FPC	Fresno Pacific College
HCRL	Horticultural Crops Research Laboratory
MHS	Madera High School
MLML	Moss Landing Marine Laboratories
UAEU	United Arab Emirates University
UCSF	University of California, San Francisco
VAMC	Veteran Administration Medical Center
VCH	Valley Children's Hospital
VMC	Valley Medical Center
VCRC	Valley Caregiver Resource Center

12:30 ***Opening Remarks:***

Dr. Ric Brown, Acting Director, University Grants & Research California State University, Fresno

Dr. Donna Hudson, University of San Francisco, Fresno-Central San Joaquin Valley Medical Education Program

12:45 ***Characterization of Pseudomonads for Biological Control of Green Mold of Citrus***
Douglas K. McDowell (CSUF)

1:00 ***Food Habits of Harbor Seals Near Monterey Bay, California***
Stephen J. Trumble, James T. Harvey (MLML)

1:15 ***Neuropsychological Methodology Part 1: The Effects of Varied Subject Selection Procedures***
Elizabeth M. Stanczak, Daniel E. Stanczak (CSPP)

1:30 ***Feasibility of Fiber Composite Laminates for Repair of Earthquake Damaged Masonry Buildings***
J. Larralde-Muro, A. Hamid (CSUF/UAEU)

1:45 ***Neuropathology of Alzheimer's Disease in the Hippocampus***
Fen-Lei F. Chang, Manu Hegde, Shannon Shield (VAMC/ADC)

2:00 - 2:30 **Break**

Moderator:	**Dr. Mary Beth Kenkel**
Graduate Judges:	**Dr. Daniel Griffin** **Dr. Donna Hudson** **Dr. Joseph Smilanick**
Doctoral Judges:	**Dr. Ric Brown** **Dr. Robert Wells**

University Business Center
Rooms 194ABC

Poster Session
1:00 p.m. - 4:00 p.m.

Authors will be available for questions from 2:00 p.m. - 2:30 p.m.

(1) ***Ubiquitin Protein Degradation Pathway***
Brian Abela, Jose Sy (CSUF)

(2) ***Political and Economic Development of Costa Rica***
Luis Cervantes (CSUF)

(3) ***Mass Spectrometry of Chalcones***
Mei Chen (CSUF)

(4) ***Population Biology of Insect Parasitoids in Vineyard Agro-Ecosystems***
Deborah Dexter-Mendez (CSUF)

(5) ***United States Foreign Policy in Relation to Three Types of Islamic Countries***
Noel C. Hanna (CSUF)

(6) ***Spatial Memory: Encoding and Retrieval in Young and Elderly Adults***
Sandy S. Martin, Matthew J. Sharps (CSUF)

(7) ***Auditory Imagery Suppresses the "Category Superiority Effect"***
Celeste J. Merryman, Janeen R.S. Antonelli, Matthew J. Sharps (CSUF)

(8) ***The Prevalence of Giardia in Cattle of Fresno County***
Martha Mockbee (CSUF)

(9) ***Spiders as Beneficials in Vineyards***
Julia Tinker, Mark Mayse (CSUF)

(10) ***Recent and Historical Raptor Populations in Fresno, Madera, and Merced Counties, California***
Tim Schweitzer, David L. Chesemore (CSUF)

(11) ***Changes in Self-Esteem During a Residential Camp Experience for Children with Asthma***
Raven Sosnowski, Audrey F. Punnett (CSUF/UCSF/VCH)

University Business Center
Rooms 194ABC

Poster Session (Continued)
1:00 p.m. - 4:00 p.m.

Authors will be available for questions from 2:00 p.m. - 2:30 p.m.

(12) ***Economics of Crop Production with Reduced Surface Water Supplies: Westlands Water District***
James H. Cothern, Dennis Nef (CSUF)

(13) ***Economics of Reduced Surface Water Supplies on Westlands Water District and Fresno County***
James H. Cothern, Dennis Nef (CSUF)

(14) ***Improving Counselors' Self-Efficacy for Conducting Sexual Interviews***
Chris Erickson, Ester Ruiz Rodriquez, Araxi Hovhannessian, Christin F. Norton(CSUF)

(15) ***Assessment of Depression in Substance Abusers***
Stephen R. Griffith (UCSF/F/VAMC)

(16) ***A Study of University Supervisors' Strategies in Working with Marginal Student Teachers***
Joan Henderson-Sparks, Richard Ehrgott (CSUF/FPC)

(17) ***Integration of Alternative Treatments for Control of Postharvest Insect Pests of Walnuts***
Judy A. Johnson, E.L. Soderstrom, C.E. Curtis, P.V. Vail (HCRL)

(18) ***Face Recognition: Is Attractiveness a Function of Familiarity?***
Jean M. Ritter, Davin Youngclarke, Kimberly Price (CSUF)

(19) ***Verbal and Visual Memory in Human Aging***
Matthew J. Sharps (CSUF)

(20) ***Retrospective Review of Pediatric Cardiomyopathy Patients in Fresno***
S.C. Winter, K.L. Jue, J. Prochazka, L.S. Linn, S.A. Winter, P. Tsai, R. Williford (VCH)

21) ***Why Grape Puffs are Puffy? - An Analysis of MIVAC Temperature Curves***
Matthew Yen, Carter Clary (CSUF)

22) ***Field Determination of Agricultural Pumping Plant Electric Motor Efficiencies***
David Zoldoske, Kenneth H. Solomon (CSUF)

Concurrent Session A — University Business Center Auditorium **191**

Moderator: **Dr. Ric Brown**

Judges: **Dr. Ric Brown**
Dr. Robert Wells

2:30 ***Integrating Academic Curriculum and Behavior Management Techniques in the Classroom: A Wholistic Approach***
Judith Krabo (CSUF), Terry de Forrest

2:45 ***Internalizing Behavior and Adjustment to Camp in Children with Asthma***
Gary M. Kelley, Audrey F. Punnett (CSPP/UCSF/VCH)

3:00 ***Contracts and the Prediction of Everyday Events***
Michael Reed (CSPP)

3:15 ***Oxidant Suppression and Hyperoxia in a Leukocyte Depleted Skin Flap Model***
Ming Lee, Toby Johnson, Tina Moore, Berkeley Noel, Ming Wong, Richard Stewart, Kent Yamaguchi
(VMC/VAMC/CSUF/UCSF/FMEP)

3:30 ***A Longitudinal Study of Anxiety: Noted Relationships Between Anxiety, Depression, Parenting Style, and Academic Achievement***
Cherie Rector (CSUF)

3:45 **Break - University Business Center Gallery**

4:00 **Concurrent Sessions Resume**

Moderator: **Dr. Ethelynda Harding**

Judges: **Dr. Daniel Griffin**
Dr. Donna Hudson
Dr. Joseph Smilanick

2:30 ***RNA Splicing Activity is Restored to A U1 snRNP-Depleted Hela Cell Nuclear Extract by the Addition of a Concentrated Cyanobacterial Extract***
D.R. Wells, S.A. Kovacs (CSUF)

2:45 ***The Facilitation of Instructional Television by Technical Operators***
Christopher W. Uhlich, Kathryn J. Biacindo (CSUF)

3:00 ***Department Store Retail Managers: Education, Employment, and Job Satisfaction***
Gail D. Seymour, Dianne D. Dickerson (CSUF)

3:15 ***Geographic Information Systems (GIS) of the Chicxulub Impact Crater: The Geophysical Data Related to Multiple Cretaceous-Tertiary Impact Events***
Thomas H. Sabatino (CSUF)

3:30 ***Analysis of Thallium and Angiography Data for Detection of Coronary Artery Disease***
Edgardo Resto, Prakash Deedwania, Chris Engelman, Donna Hudson, Ronna Mallios, Anamarie Graf (MHS/UCSF/VAMC)

3:45 ***Clinical Outcome of High-Grade Carotid Artery Stenosis Detected by Doppler Ultrasonography***
Rajneesh Batth, Monica Almanza, Malcolm Anderson, Donna Hudson, Ronna Mallios (FHS/UCSF/VAMC)

4:00 **Concurrent Sessions Resume**

Moderator: **Dr. Mark Mayse**

Judges: **Dr. Mark Mayse**
Dr. Ronald Unruh

2:30 ***A Review of Present Practices in Education of the Deaf Among the Hmong Population***
Mary Hayes, Bette Baldis (CSUF)

2:45 ***The Effects of Hyperbaric Oxygen Treatment and Free Radical Control on Tissue Viability***
Gracie Azevedo, Brent Wilson, Christine Lopopolo, Mark Jacoby, Steven O'Hara, Richard Stewart, Kent Yamaguchi (CSUF/VAMC/VMC/UCSF/FMEP)

3:00 ***Prevention of Peritoneal Adhesions***
Mark Yamaguchi, A. Sohrabi, D. Leppla, (VAMC)

3:15 ***Blood Glucose and Pulse Pressure Changes in Alcoholics Following Induced Hypoglycemia***
Christopher Sabourin, Ronald Kokes, Lauri C. Gebhard (CSUF/UCSF/CSPP)

3:30 ***Physiological Basis of Dissociative Amnesia: A Theoretical Hypothesis***
S. Denise Lanier (CSUF)

3:45 **Break - University Business Center Gallery**

4:00 **Concurrent Sessions Resume**

Moderator: Dr. Robert Palacio

4:00 ***Solvent Pollution in the Dry Cleaning Industry--Control Strategies***
George P. Hanna Jr., John R. Johnston (CSUF)

4:15 ***Solvent Pollution in the Dry Cleaning Industry -- Technological Alternatives***
John R. Johnston, George P. Hanna, Jr. (CSUF)

4:30 ***Strategic Planning for Student-Centered Information Systems***
Kelly Black (CSUF)

4:45 ***A Support Group for Patients Diagnosed with Early Dementia***
Linda J. Hewett, Margery Minney, Catherine Christy (ADCCC/VCRC/CSPP)

5:00 ***Latinas In College: Familism and Relationships as Correlates of Global Stress Among College Latinas***
Manuel Figueroa, Sandy Lamba, Blanca Brown, Phillip Holcomb, Samuel Danyan

5:15 **CONCLUSION - PROCEED TO AWARDS & SOCIAL HOUR**

Moderator: Dr. Harold Price

4:00 ***Dietary Habits and Nutrient Intake During Pregnancy in Fresno County Hmong Population***
Pouran Sohrabi, Isabel Good, May Ly (FCHSA)

4:15 ***Factors Associated with Bone Density in Women Veterans***
Paulette Ginier, Marilyn Brownell, Ronna Mallios, V.R. Bobba (UCSF/VAMC)

4:30 ***Preliminary Data on the Effect of Telephone Intervention on Improving Patient Outcomes for Patients In Crisis In A Dual Diagnosis Day Treatment Program***
Phyllis Byers, Cindy K. Bromberg (VAMC)

4:45 ***The Crisis in Impotence Diagnosis Solved by Post Papaverine P02 of Cavernosal Blood Combined with Venous Leak Data***
Anthony H. Horan (VAMC)

5:00 ***The Effect of Summer Temperatures on Glucose Test Strips in Prehospital Vehicles***
Brian P. Sutton, Thomas R. Magill, Herbert G. Bivins (VMC)

5:15 **CONCLUSION - PROCEED TO AWARDS & SOCIAL HOUR**

JUDGES FOR THE ABSTRACTS PRESENTED BY STUDENTS

Ric Brown	(CSUF)
Daniel Griffin	(CSUF)
Donna Hudson	(UCSF)
Mark Mayse	(CSUF)
Joseph Smilanick	(USDA)
Ronald Unruh	(CSUF)
Robert Wells	(VCH)

Papers will be judged on the following criteria and considerations:

- **Merit, creativity, timeliness, and value to an audience of scholars not necessarily from the same discipline.**
- **Authors are encouraged to present their work using terminology suitable for a multi-disciplinary audience.**
- **Results of completed work, as well as work-in-progress, for which there is preliminary data.**

ABSTRACTS

(In Alphabetical Order by First Author)

Ubiquitin Protein Degradation Pathway

Dr. Jose Sy
Brian Abela
(Masters Thesis)

Department of Chemistry
California State University, Fresno
2555 E. San Ramon Avenue
Fresno, CA 93740-0070

The small highly conserved polypeptide ubiquitin has been found to play an important signaling role in many regulatory mechanisms. Isolated from a diversity of eukaryotic cells, ubiquitin has been associated with functions such as DNA repair, cell cycle control, stress response, and protein degradation. Current research has advanced our understanding of the ubiquitin mechanism for selective ATP dependent protein degradation. In this pathway ubiquitin has been found to covalently link to proteins which suggests a signaling mechanism.

Our research in this area focuses on the identification of specific intracellular proteins involved in ubiquitin mediated protein degradation. Extracellular proteins have provided the basis for understanding this cell cycle. However, the use of intracellular substrates is required to determine the specificity of this pathway and any evolutionary conservation among various eukaryotic organisms.

Protein identification is based on probing eukaryotic cell lysate bound to a stable membrane with radiolabeled ubiquitin to assay for the presence of protein-ubiquitin conjugates. Ubiquitin must first be labeled with radioactive iodine and with the presence of a tyrosine residue, N-Chloro-benzenesulfonamide can be used as an oxidizing agent to covalently link the iodine to the tyrosine functional group. Finally, native and SDS polyacrylamide electrophoresis will be used to quantify and identify the target proteins.

Cell lysate extracts from rabbit and porcine have been prepared and blotted to nitrocellulose. These stable sources of intracellular proteins will be the basis for the identification of ubiquitin substrates.

CLINICAL OUTCOME OF HIGH-GRADE CAROTID ARTERY STENOSIS DETECTED BY DOPPLER ULTRASONOGRAPHY

Rajneesh Batth[a], Monica Almanza, M.D.[b,c],
Malcolm Anderson, M.D.[b,c], Donna Hudson, Ph.D.[b], Ronna Mallios, M.S.[b]

[a]Fowler High School, [b]University of California, San Francisco,
[c]Veterans Affairs Medical Center, Fresno

Oral Presentation
High School Student Presenter

Narrowing of the carotid arteries (stenosis) may result in a reduction of blood flow to the brain, increasing the patient's risk for a stroke. In some patients, the risk of a stroke may be reduced by operating on the stenosis to improve blood flow to the brain. Doppler ultrasonography is a very sensitive method for detecting significant stenosis. In a retrospective study, we followed the course of patients with carotid artery stenosis to assess the influence of Doppler ultrasonography on the patient's management.

In the study, data were obtained from patient charts and computer records. Variables recorded included date and results of ultrasonography, date of angiography, date of surgical evaluation, endarterectomy (surgery), cholesterol, creatinine, and BUN levels, and presence of risk factors, including diabetes, smoking, myocardial infarction, hypertension, coronary artery disease, pulmonary disease, history of cancer or stroke, and cardiac complications. Additional variables collected included radiographic findings of any of the following: emphysema, pleural effusion, large heart, or cardiac failure; one-year vascular clinic follow-up, date of long-term follow-up, and date of death if the patient was deceased.

One-hundred-six patients were identified by ultrasonography with significant stenosis. Twelve of these patients had stenosis in the common carotid artery, and were evaluated separately, leaving 94 patients in the study. Table I shows follow-up data for patients in various categories. The number of patients in each group is shown in parentheses. Table II shows survival data

Table I: One-Year Follow-up

	1 yr. Follow-Up	Death	Neither
Surgical Evaluation (72)			
Angiography (55)			
Surgery (44)	16	2	26
No Surgery (11)	4	2	4
No Angiography (17)	2	7	8
No Surgical Evaluation (22)			
Angiography (7)	2	0	5
No Angiography (15)	4	2	8

Table II: Survival Analysis

	Total	Number Died	Percentage
Surgery	44	2	4.5
No Surgery	50	13	26.0

The patients who had surgery had a significantly better outcome. Factors which affect the surgery/no surgery decision require further evaluation.

Strategic Planning for Student-Centered Information Systems

Presentation Preference: Oral

by

Kelly Jarvis Black, Ph.D.
Craig School of Business
California State University
Fresno, CA 93740-0007

Abstract

University computers contain a great deal of data about students and classes. The topic of this paper concerns whether a student can get helpful and timely information from university computer access. Darlene Burnett, referring to the current status of student information, said that the campus is "data rich but information poor" (IBM Academic Consulting Series, 1994.) I will expand on that proposition.

Imagine a student-accessible screen similar to the Mosaic graphical interface on the Internet. It might have icons for admissions, the library, the student union, the catalog, a personal class schedule, and a degree audit. Hot spots via hypertext could jump to financial aid and employment opportunities. Home pages for each department would invite investigation. This environment is not just possible, but is now being implemented at many universities. I will review these applications.

Although it may seem obvious that students are the customers of higher educational institutions, this fact is not apparent in the design of university information systems. In an era of wholesale redesign of corporate information systems to better serve the customer, university computers, with few exceptions, still carry out the projects of the administration. While corporate systems are being reengineered with the objective of renewing and implementing company missions and goals, university computers are used for calculations and data in much the same way they were twenty years ago. There is a real need for a reassessment of the purposes of university computing, and for instituting student-centered university information system planning based on critical success factors.

Preliminary data on the effect of telephone intervention on improving patient outcomes for patients in crisis in a dual diagnosis day treatment program

Phyllis Byers, B.S.N.
Cindy K. Bromberg, Ph.D.
Veterans Administration Medical Center-Fresno
Oral Presentation

This is the first report of data collected on the effect of telephone crisis intervention at a day treatment program designed to treat veterans with comorbid chemical dependency and psychiatric disorders. The dually diagnosised veterans are expected to voluntarily attend and participate in treatment for a year or more to achieve sobriety and emotional stability. The veterans are informed that the staff is available by telephone to assist them when they are experiencing an emotional crisis.

Data was collected for each crisis call made by participating veterans. The data included: patient code, identified crisis, and behavioral outcome. The control group consisted of calls received prior to the implementation of a monitored telephone crisis intervention tool and the treatment group included calls received after the implementation of the tool.

There were twenty nine subjects in the study: N=14 in the control group and N=15 in the treatment group. There were 138 crisis calls in the data collection with 97 calls in the control group and 41 in the treatment group. A rating scale was created in which the most positive behaviors were ranked 1 and the most negative 8. The mean ranking of all calls made by the control group was compared to the mean ranking of all calls made by the treatment group. Examples of positive outcomes include reduction in anxiety, making an appointment for individual therapy, or hospitalization to prevent negative behaviors. Examples of negative outcomes include: self harm, suicidal attempts, continued use of chemicals, or hospitalization after the caller has engaged in negative behaviors.

Preliminary data indicate a reduction in negative behaviors after the implementation of the monitored telephone intervention tool. The Mann-Whitney U test produced a z score of 2.77 which was significant at the $p < .005$ level. These scores are the result of statistical analysis of data collected before the completion of the actual study.

Possible explanations for the lower mean score obtained by the treatment group (indicating more positive outcomes) are: 1) the effect of the therapeutic relationship, 2) improved staff interventions as a result of attending to calls more systematically when using the monitoring tool, and 3) the treatment effect of the subjects' ongoing participation in a long term treatment program.

Political and Economic Development of Costa Rica

Poster Presentation

Submited by
Luis Cervantes
California State University, Fresno

Abstract

This research project investigates the recent political and economic development in Costa Rica. The project was conducted under the guidance of Professor Freeman Wright from the Political Science Deparment at California State University, Fresno. Relevant information was obtained through many sources, including International Periodicals Directory, Third-World Guide, and Latin American and Contemporary Record. The first step was to identify selected criteria of political and economic development. The criteria for political development included differentiation, secularization, and participation. The criteria for economic development included production and distribution. Finally, the degree to which political and economic development intersected was analyzed.

Neuropathology of Alzheimer's Disease in the Hippocampus

Fen-Lei F. Chang, PhD, MD, Manu Hegde, Shannon Shield, VA Medical Center at Fresno, UCSF - Fresno MEP, Alzheimer's Disease Center of Central California. Neurology (127), VA Medical Center, 2615 E. Clinton Ave., Fresno, CA 93703
[Oral presentation]

One of the most devastating impairments of Alzheimer's disease (AD) is memory deficits. Frequently, in late stages, patients forget their spouses and get lost in their own homes. The hippocampus, a brain structure located within the mesial temporal cerebral cortex, has been shown to play a pivotal role in learning and memory. The neuropathology in the hippocampus is thus important not only for an accurate diagnosis of AD, but for the understanding of its pathophysiology.

Ten autopsied brains of patients with the clinical diagnosis of AD were included in this study. After being fixed in paraformaldehyde, the left hippocampus was cut into blocks, thin sectioned, and then processed for histological stains.

Neuronal cell densities in two subfields of the hippocampus, CA1 and dentate, were counted. With the clinical progression of AD, cell death was greater in the rostral segment of the hippocampus than in the middle or caudal segments in subfield CA1, (55% vs. 38% and 34%, $p < .05$). In contrast, the dentate gyrus showed less cell death overall and less regional variation. This finding illustrates the uneven distribution of AD pathology along the long axis (rostro-caudal) of the hippocampus.

We also noted an increase in the variability of measures of neuronal density (38%, 19% and 23% respectively for rostral, middle, and caudal segments of the hippocampus, $p < .05$). This finding provides further evidence for the 'patchiness' of AD pathology.

The causes of this variability are unknown, but possibilities include differences in neuronal connections, in neurotransmitter distribution, in the distribution of other elements of AD pathology (e.g. senile plaque, amyloid, tau or ubiquitin), and in vascular pathology. This demonstration of regional variation in the extent of neuronal death thus lays the foundation for further immunohistochemistry and cytochemistry studies of Alzheimer's disease pathophysiology.

MASS SPECTROMETRY OF CHALCONES

Poster

Mei Chen (M.S.)

California State University, Fresno
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The mass spectra of chalcones with methyl-, methoxy-, and chloro-substituents on both aromatic rings were systematically studied. A previously unreported intense peak of m/z 131 was found in some chalcones which have methyl group on the ortho position of the ring adjacent to the carbonyl group. The proposed formation pathway of the peak at m/z 131 involves an interaction between the methyl group and the alkene unit. Five deuterated chalcones were then synthesized and investigated.

The 2-methyl-d_3 acetophenone needed for the synthesis of the deuterated chalcones was synthesized from *o*-bromoacetophenone. Condensations of benzaldehydes with acetophenones gave corresponding chalcones with sodium hydroxide as catalyst. The mass spectra of both labelled and unlabelled chalcones were recorded on a HP 5988A mass spectrometer coupled to a gas chromatogragh at electronic energy 70 eV.

The comparison of the mass spectra of 2'-methyl-chalcones and 2'-methyl-d_3-chalcones agrees with the proposed mechanism, in which the formation of ions at m/z 131 involves hydrogen transfer from methyl group on the 2'-position to the β carbon followed by α–β bond cleavage and cyclization of the radical site to the β carbon. The data, however, suggest that the hydrogen may also transfer to the α carbon followed by 1,2 hydrogen shift from the α carbon to the β carbon.

The mechanisms of formation of electron impact generated ions at m/z 131 of 2'-methyl-chalcones have been obtained by duterium labelling experiments. Rearrangements occured in the formation involve hydrogen transfer, α-β bond cleavage and cyclization.

ECONOMICS OF CROP PRODUCTION WITH REDUCED SURFACE WATER SUPPLIES: WESTLANDS WATER DISTRICT

Presentation Preference: Poster

James H. Cothern
Dennis Nef
Department of Agr. Econ.
CSU-Fresno

Introduction: Westlands growers would likely adjust to longer term water supply constraints by altering production practices which would maximize profits from crops best utilizing the reduced water supply. This adjustment would effect both the type and magnitude of crops grown. We considered three major types of restrictive surface water policies, coupled with two extensive cropping alternatives. We incorporated these alternatives into a model which would select optimal district cropping patterns through profit maximization.

Methodology: Our model was comprised of 19 district cropping activities, a non-harvest activity, a non-bearing crop activity and a fallow activity. Standardized enterprise costs for these 22 activities were included, derived from University of California Cooperative Extension Service budgets. These activities were incorporated into a computer program systematically testing the profitability of these cropping activities, considering constraints also contained in the model.

Summary: The study considers possibilities ranging from moderate water supply contractions to those which could be considered more extreme. Changes in profitability in the most extreme case exceed the actual change occurring in 1990-91, when district *gross receipts* fell by more than $90 million. In the extreme case *net receipts* would decline by more than $107 million.

Conclusions: Cotton is the dominant crop in the project and few alternatives exist for the current acreage devoted to its cultivation. Alfalfa and grain production are the most vulnerable to a combination of water supply diminishment and/or cost increases. Fruit, nut and vegetable production are the least vulnerable to changes in water costs, but demand considerations limit expansion of these crops.

ECONOMICS OF REDUCED SURFACE WATER SUPPLIES ON WESTLANDS WATER DISTRICT AND FRESNO COUNTY

Presentation Preference: Poster

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Introduction: The primary thrust of this study was to measure the economic significance of a range of surface water reduction scenarios on Westlands Water District and the economy of Fresno County. Both direct and indirect influences were measured. We considered three major types of restrictive surface water policies coupled with two extensive cropping alternatives. Variations on a basic supplementary water procurement option were also included as well as surface water procurement-management options.

Methodology: Total earnings and employment losses for Fresno County were estimated using input-output multipliers derived by the Regional Input-Output Modeling System (RIMS II). RIMS II is maintained by the Regional Economic Analysis Division, Bureau of Economic Analysis (BEA), US Department of Commerce. RIMS II was used to estimate the impact of a changes in Westlands Water District expenditures by industry on regional output, earnings and employment. It was run under several policy simulations to test earnings and employment effects.

Summary: Our analysis considered intensive and extensive crop alternatives forthcoming under district reorganization and measured their transmitted effect on Fresno County. We considered reductions in cotton acreage, and shifts to acreage of extensive crops, like wheat and safflower and to intensive crops, like cantaloupes and onions.

Conclusions: Our evaluation of the Westlands Water District considered possibilities ranging from moderate water supply contractions to those which were more extreme. Negative changes in Fresno County earnings in the most extreme case top $137 million. Net employment losses in the most stringent case exceed 5,400 worker years and in all cases exceed 2,200.

POPULATION BIOLOGY OF INSECT PARASITOIDS IN VINEYARD AGRO-ECOSYSTEMS

POSTER

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The parasitic wasp complex which includes important biological control agents in vineyard agro-ecosystems is currently not well understood. In order to investigate the abundance and diversity of vineyard parasitoids, five sampling methods were used: pitfall traps, malaise traps, yellow sticky traps, canopy shake cloth, and berlese funnels. Two areas of the San Joaquin Valley and three farming methods constituted the experimental areas of this study. The farming methods included sustainable, organic, and conventional pruduction systems.

Seasonal samples for 1993 from shake cloth sampling included 20 parasitic wasps from seven families. Pitfall sampling for 1993 produced 533 parasitic wasps, mostly wingless proctotrupoids and a few chalcidoids. Fall 1993/winter 1994 pitfall sampling also included the mymarid wasp Anagrus (3.3/pitfall).

Ten percent of malaise traps in 1994 contained parasitic wasps (mostly chalcidoids with a few ichneumonidoids). Sticky traps revealed extremely high populations of Anagrus (2,000 / card) during August (the start of monitoring) as well as a few other chalcidoidea (7 / card). Shake sampling yielded very few chalcidoid and proctotrupoid wasps (7), while pitfall trap results were similar to 1993: i.e., many wingless proctotrupoid and few chalcidoid wasps. Different sampling methods reflected different population dynamics and ecology of these important parasitic wasps.

IMPROVING COUNSELORS' SELF-EFFICACY FOR CONDUCTING SEXUAL INTERVIEWS

Poster Presentation

By

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The present study examined the differential effects of vicarious learning and performance accomplishments among counselors learning to conducting a sex history. Participants included 20 counselor trainees enrolled in a sexuality counseling course in a graduate counseling program. Each of the participants was randomly selected for inclusion in either one of two treatment groups or a control group. All participants first received a lecture on how to conduct a sex history and participated in role play exercises with their classmates. Next, counselors assigned to the first treatment group watched an expert sexuality counselor conduct a sexual history interview with a client. Those in the second treatment group did not watch an expert, but instead were required to conduct their own sexual history interview with a client. Participants in the control group did not watch the expert conduct a sex history, nor conduct a sex history themselves. Self-efficacy ratings of counselors among the three groups were compared in order to determine whether the effects of modeling an expert or of performing the counseling task oneself significantly increased counselors' estimations of their abilities more than if they had received no additional training. Implications for counselor education curriculum modifications are presented.

LATINAS IN COLLEGE: FAMILISM AND RELATIONSHIPS AS CORRELATES OF GLOBAL STRESS AMONG COLLEGE LATAS

Dr. Manuel Figueroa, Sandy Lamba, Blanca Brown, Phillip Holcomb, and Samuel Danyan

ABSTRACT

This project is studying the impact of Familism and Close Social Relationships in explaining Global College Stress among Latinas. This process tends to change dramatically as Latinas become acculturated; therefore, generational levels will be considered. Demographic factors will be taken into account in order to explain variance. Several preliminary hypothesis have been already defined and are in the process of being tested.

FACTORS ASSOCIATED WITH BONE DENSITY IN WOMEN VETERANS

Presentation Preference: Poster

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Osteoporosis is an age-related multifactorial condition in which bone loss progresses and predisposes to fracture in later life. Osteoporosis affects 20 million US Americans and is the cause of 1.3 million new fractures per year among persons age 45 and older. Most of these fractures occur in women.

To determine factors contributing to osteopenia a wide range of potential bone mass correlates was evaluated.

A total of 75 ambulatory, non-black women veterans were studied. All subjects received a baseline interview and examination in which demographic and historical information, as well as antropometric measurements were obtained. Dual-photon absorbtiometry scans to assess bone mineral density (BMD) were taken at the lumbar spine and femoral neck at baseline and every 6 months over a period of two years.

Increased weight and body mass index (kg/height [m^2]) were associated with higher (BMD). Conversely, lower BMD was associated with older age, years since menopause and smoking (reported in order of decreasing strength of association). An inconsistent association between estrogen use and BMD was noted. Further analysis of estrogen use in 34 women followed for a full two years showed 3 to be never users, 3 to be past users (around the time of menopause), 20 to be late users and 8 to be continuous users since menopause. Mean baseline BMD was not significantly different among the above groups. Moreover, mean percent gain in BMD over 2 years was not significantly greater between late and continous users.

We conclude that in women veterans many factors can influence BMD; the most important are age and years since menopause. In addition, late initiation of estrogen can still provide skeletal benefit.

ASSESSMENT OF DEPRESSION IN SUBSTANCE ABUSERS

Presentation Preference: Poster

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Alcohol and drug abusers have been shown to have a high incidence of comorbid depression. Investigators have reported that with alcoholics, the intensity of depression is much higher during drinking and early withdrawal, rapidly decreasing with abstinence. The course of depression in abusers of other substances has not been studied as systematically.

The purpose of the present study is to measure the change in degree of depressive symptoms over time in a mixed population of hospitalized alcoholics and drug abusers. It is hypothesized that there will be a decrease in depressive symptoms that will be similar across all categories of substance abusers. The study is also designed to compare subjects who have used substances up to the time of admission with those who have been "clean" at least two weeks.

The subjects, all male veterans, include 250 consecutive admissions to the chemical dependency unit at the Fresno Veterans Administration Medical Center. Each subject is administered the Beck Depression Inventory (BDI) one week following admission. The BDI is then retaken one month later. The Beck Depression Inventory is a widely used self - assessment instrument shown to be reliable, easily administered, and understandable. A score of 14 or higher indicates the presence of significant depression.

90 subjects have completed the initial test, and 50 have been retested. Preliminary results show a mean score of 18.66 on the first test , and a mean of 10.93 on re testing. A more complete data analysis comparing results among abusers of different substances will be presented as more subjects are tested.

SOLVENT POLLUTION IN THE DRY CLEANING INDUSTRY -- CONTROL STRATEGIES

Oral

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This paper is based on a report by the authors to the California Dry Cleaning Industry Task Force and addresses possible strategies for dry cleaning solvent source control and mitigation of existing contamination.

Preventing current and future pollution involves two source control strategies. The first is to install state-of-the-art equipment and to implement appropriate practices that minimize emissions from dry cleaning plants. The second strategy is to replace the current dry cleaning process, which uses perchloroethylene (PCE), with another process or another solvent. This option is not currently available, though it may provide a future solution.

When dealing with existing water and soil contamination, four strategies can be considered. The first is to continue the current practice of waiting for water supply wells to be contaminated and then embarking on a litigation process in which multiple parties vie to fix or avoid financial responsibility. A second mitigation strategy is an aggressive effort by industry to locate contaminated sites while they are relatively small. Clean-up might be financed by an industry-generated fund. A third strategy focuses on an early warning system of monitoring wells installed around water supply wells by water purveyors. Contamination could be identified, and mitigation measures employed, before the water supply is compromised. Deciding financial responsibility is, however, problematic. The fourth strategy is to provide treatment at water supply wells instead of cleaning up contaminated sites. Funding might be shared by industry and water purveyors through site-specific negotiated settlements.

Each alternative involves a complex mix of technological, regulatory, financial, and political issues. A clear choice has yet to emerge.

UNITED STATES FOREIGN POLICY

IN RELATION TO THREE TYPES OF ISLAMIC COUNTRIES

Poster Presentation

by

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The United States has an interest in spreading democracy. During the Cold War, the United States had expended considerable amounts of resources and energy at containing the spread of Soviet Communism in strategic areas such as the Middle East. However, since the fall of the Soviet Union, recent U.S. concern has focused on the ideological conflicts between Islamic beliefs and democracy. Indeed, many analysts have declared that democracy and Islam are incompatible. Because the U.S. has such a vital interest in promoting democracy within many Islamic countries, it would be useful to empirically assess the extent to which countries with Islamic legal systems are compatible with democracy. The present study investigated 51 countries which are members of the Organization of Islamic Conference (OIC). According to several different types of Islamic legal systems, this study determined if one type of legal system was more related to the concept of political democracy than another. Results indicate that the type of Islamic law used is significantly related to its compatibility with political democracy. Implications for U.S. foreign policy and future research are presented.

A REVIEW OF PRESENT PRACTICES IN EDUCATION OF THE DEAF AMONG THE HMONG POPULATION

Oral Presentation

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With the rapid growth of diversity in the classrooms, educators are being forced to address multicultural issues. However, educators of the Deaf have a more difficult task, focusing on their students' deafness, Deaf culture, as well as the students' primary culture. This cultural pluralism has hinted at the necessity for a multilingual approach to instruction. Without basic knowledge of the different cultures represented in the classroom, the teacher cannot effectively address the students' needs and modify instruction for facilitate learning. With an increasing Hmong population in Fresno county's deaf classrooms, this study focuses on the basic aspects of the Hmong culture.

Although the Hmong population is quite abundant in this area, sources regarding their culture is limited. Therefore, in addition to gathering literary sources, personal interviews were conducted to achieve a more precise overview of the Hmong culture.

This study provides a basic overview of the Hmong culture in regards to: 1) Clans 2) Family 3) Living Arrangements 4) Marriage 5) Discipline 6) Religion 7) Holidays 8) Health and Medical Practices 9) Disabilities and 10) Education. However, it should be recognized that the Hmong are a diverse group and the available research is generalized to provide a simple overview.

In conclusion, educators need to make the effort to learn and understand the student's culture. Furthermore, they should use this new knowledge to improve parent and student relations and help personalize the student's curriculum.

A STUDY OF UNIVERSITY SUPERVISORS' STRATEGIES IN WORKING WITH MARGINAL STUDENT TEACHERS

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The purpose of this current study was three-fold: 1) to determine the criteria typically used by university supervisors to identify marginal student teachers, 2) to determine those strategies that supervisors successfully use to assist marginal student teachers, and 3) to compare findings about these strategies with those identified by research as successfully used by principals with marginal teachers.

The study was descriptive, using a questionnaire survey as the investigative tool. The population was university supervisors in schools of education in the California State University and the University of California system. Many of the questions used on this survey were drawn from a prior study of marginal teachers conducted by the researchers in 1993. This was done to provide a baseline for comparison in order to address the question of it, and how, marginal teachers differ during the pre and in-service phases of their careers.

Preliminary results indicate that there are many similarities between the characteristics of the two groups: both groups identified persistent class control, personal crisis, and not being suited to subject or grade level as major contributors to marginality. Similarly, continuous classroom observations by master teacher and/or university supervisor with specific feedback to the student teacher, peer coaching, and prescribing special instructional materials," as very helpful. Both sets of supervisors felt that working with marginal teachers was among the most difficult responsibilities that they performed and cited lack of time as the greatest roadblock.

It would seem logical that certain linkages between pre-service and regular service experiences might be productive.

A SUPPORT GROUP FOR PATIENTS DIAGNOSED WITH EARLY DEMENTIA

Oral Presentation

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As the number of persons affected by Alzheimer's disease soars, treatment approaches assume more importance. In this report, we assess the effectiveness of the support group as a treatment intervention for early stage dementia patients.

This group experience was provided as part of the clinical service offered by ADCCC and VCRC. Groups met weekly for eight weeks. All patients were evaluated for cognitive impairment, functional status, and depression.

Patients drew strength from shared experience. Initial resistance gave way to anticipation of the next meeting. The group allowed for expression of negative feeling associated with the disease, frustration over enforced dependence, and fear of the future. Despite the prospect of continued losses, patient were future oriented and sought ways to cope. They universally expressed hope, but feared being a burden on their families, voicing acceptance of eventual institutionalization. On the negative side, some attendees found the observed precipitous decline of a few members depressing. Also, while patients were tolerant of deficits, those with better preserved cognition found difficulty in remaining attentive to more impaired members.

Our clinical observations are both enlightening and encouraging, and provide pointers for more rigorous studies. Support group involvement is helpful for those with early dementia. Open discussion about the disease and gentle exploration of the issues confronted enabled many patients to increase communication with their caregivers, and be more fully involved in their own care and treatment.

THE CRISIS IN IMPOTENCE DIAGNOSIS SOLVED BY BY POST PAPAVERINE PO2 OF CAVERNOSAL BLOOD COMBINED WITH VENOUS LEAK DATA

oral

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At present no test clearly distinguishes the blood vessels of impotent men from normals including Doppler studies. Previous studies of pO2 in post papaverine cavernosal (cav.) blood have failed to account for the pH of 4.0 of the introduced solution which falsely raises the p02. In the present series, the p02 fifteen minutes after 30 mg of papaverine was corrected thus: p02 cav. blood minus pH of brachial artery - pH of cavernosal blood ÷ .005 pH units/ 1 mm Hg p02 = corrected p02.

The current results in a series of 71 tested for a response (>23 cm H20 @ 20 min.) and venous leak (60 cc saline infused in 60 sec.) show the following: (1) significant differences (p=.05) between the mean p02's of responding versus non-responding leakers and (2) between non-leaking non-responders and responders who leak (p=.03).

Conclusions: 1) a low corrected p02 e.g. 53 in a non-responding non-leaker points an early penile implant instead of months of expensive failure with intracavernous injection or vacuum suction devices(VSD); 2) responders who leak and have a relatively high p02, e.g. 68 mm Hg, should be considered for VSD or intracavernous injection followed by venous obstruction, perhaps with fluoroscopicly placed coils; 3) psychogenic impotence is almost unknown in the population studied i.e. arterial insufficiency (identified by a corrected p02<53 mm HG) and/or venous leak were sufficiently present to account for the complaint in all but 2 patients.

Integration Of Alternative Treatments For Control Of Postharvest Insect Pests Of Walnuts

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Current postharvest insect control for dried fruits and nuts depends on the use of methyl bromide and phosphine. Various environmental and regulatory concerns may limit future use of these fumigants. No single non-chemical method provides an economical alternative to fumigation throughout the postharvest system. Our current project integrates a short-term disinfestation method with long-term protective techniques to overcome the limitations of individual alternatives for walnuts.

An initial treatment of 0.4% O_2 for 6 days was followed by one of three long-term treatments: low temperature storage (8-11°C), maintenance controlled atmosphere (CA, 5% O_2), or a protective Indianmeal moth granulosis virus (GV) treatment. Protective treatments were maintained for 13 weeks. Walnuts infested with navel orangeworm, *Amyelois transitella*, were used to evaluate the initial disinfestation treatment. Adult Indianmeal moths, *Plodia interpunctella*, were added to the long-term treatment rooms each week for eleven weeks to evaluate the protective treatments. Nut samples were taken every four weeks and Indianmeal moth pheromone traps were placed in each treatment room to determine efficacy. The test was replicated twice.

No navel orangeworm survived exposure to the initial 0.4% O_2 treatment; survival in untreated walnuts was about 80%. No serious detectable damage due to Indianmeal moth was found in any of the long-term treatments, even after 12 weeks. In contrast, approximately 43% of the untreated nuts showed serious damage by Indianmeal moth after 12 weeks of storage. High numbers of moths were caught in pheromone traps in the untreated room six weeks after the beginning of the long-term test. No Indianmeal moths were caught in either the low temperature or the CA treatments. Low numbers of moths ($\leq$12/week) were caught in the GV treatment. The results of our initial tests are encouraging; the initial CA treatment proved effective in disinfesting walnuts of navel orangeworm, and all three protective treatments kept Indianmeal moth populations at acceptable levels.

SOLVENT POLLUTION IN THE DRY CLEANING INDUSTRY -- TECHNOLOGICAL ALTERNATIVES

Oral

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Perchloroethylene (a.k.a. PCE or tetrachloroethylene) is the solvent of choice for over 85 percent of all dry cleaning establishments. Although not acutely poisonous, it is classified as a potential human carcinogen, and is under regulatory scrutiny as both a toxic air pollutant, and a groundwater and soil contaminant. This paper is based on a report on PCE pollution prepared for the California Dry Cleaning Industry Task Force by a joint CSU Fresno/UC Davis study team.

The primary air pollution problem is caused by fugitive emissions of PCE vapors from older dry cleaning machines and clothes. The most effective way of controlling these emissions is by the installation and proper maintenance of state-of-the-art dry cleaning equipment, now available on the market.

A small quantity of liquid PCE waste is also generated during dry cleaning. Current practice is to collect this waste in containers and dispose of it as a hazardous material. Prior to 1986, however, liquid wastes were commonly discharged to public sewers, from which they escaped into the soil and groundwater. In addition, some PCE was discharged directly to soil. Today, PCE contamination threatens groundwater quality in many locations.

Contaminated water and soil gases can be treated with commercially available technology, including activated carbon, air stripping, chemical oxidation, and incineration. Unfortunately, applying these technologies requires that the water or vapors be first removed from the soil. Locating and capturing PCE plumes is a technically difficult task that may be beyond the financial capabilities of most individual dry cleaners.

Internalizing Behavior and Adjustment to Camp in Children with Asthma

Oral Presentation

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Abstract

Findings from a series of studies conducted on children at an asthma camp support the idea that emotional and behavioral problems may interfere in acquisition of health and medical knowledge about their disorder as well as management of their disease (Yellowlees & Kalucy 1990). These children often experience a high level of anxiety (Viney & Westbrook, 1985) such that adjustment to camp and therefore acquisition of knowledge for the internalizing child may be affected. Utilizing data from the Camp Sierra studies (1989-1994) a correlation analysis was run on 2 of the measures: The Punnett Adjustment to Camp Scale (Punnett, 1992) and the Child Behavior Check List (Achenbach, 1981) for those children scored as internalizing (a score of 70 or above). A low correlation of -0.03 was obtained. The results do not support the hypothesis that children who score high on internalizing will have problems adjusting to camp. A t-test to determine differences between low and high internalizing was not significant, however, parents reported a significant decrease in internalizing scores 1 month after the camping experience ($p=0.04$). Further directions for research include exploring the relationship between children with high internalizing scores and the acquisition of health-related knowledge.

Integrating Academic Curriculum and Behavior Management Techniques In The Classroom: A Wholistic Approach

Oral Presentation

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There is grave concern in this country about the increase of behavioral problems and declines in academic performance in the classroom. Concurrently we have also seen a greater demand for special education services. To date, teaching strategies and policies in both regular and special education have addressed academics and behavior as mutually exclusive issues. The prevailing philosophy has been that instruction cannot begin until the inappropriate behaviors have been contained. This presentation will emphasize teaching strategies that include the integration of basic behavioral modification interventions with multisensory child-centered academic curriculum.

Our interdisciplinary research, developed in a special day class for Severely Emotionally Disturbed (SED) children, integrated the two components of academics and behavior into a wholistic curriculum that concurrently addressed student responsibility, self-esteem, social skills and academic performance. Data were gathered through direct classroom observation and review of video tapes substantiated through utilization of a levels and points system (token economy).

Through comparing baseline behaviors and academic pre-test and post-test results, we found significant improvement in the students' academic and social higher order thinking abilities. Subsequent investigation confirmed that the students were able to maintain this improvement beyond the initial classroom setting. Additionally, implementation of our strategies in a variety of classroom settings, ranging from regular education to severely handicapped classes, consistently verify our results.

We found this program to be applicable and easily implemented in all classroom populations ranging from those who are "at promise" to students who suffer from severe physical, emotional and developmental challenges.

Physiological Basis of Dissociative Amnesia: A Theoretical Hypothesis

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Abstract

Dissociative amnesia is the loss of personal memory of a stressful or traumatic event. Having it's roots in Freudian theory, dissociative amnesia was believed be the result of an individual's inability to accommodate stressful events into their personal schemas, thereby repressing the memory from available consciousness. The purpose of this theoretical hypothesis is to propose physiological processes which could account for amnesia for an extremely traumatic event. This proposed processing may occur by means of state dependent learning (SDL). Within SDL, an event experienced under one physiological condition is unavailable for recall under conditions different from the one in which the memory was originally encoded.

Traditionally, the trauma is viewed as one discrete event for which amnesia subsequently develops. An alternative, is to view the trauma in terms of concurrent physiological changes within the central and peripheral nervous systems. These processes may influence how memory for the event will be encoded. Beginning with an initial recognition of impending trauma, there is a substantial increase in epinephrine, which, under normal conditions, aids in focused attention and arousal. To alleviate this extreme arousal, an increase in endogenous opioids, particularly the endorphins and enkephalins, occurs. This adaptive increase of endogenous opioids is manifested by a dissociated state in the individual. Within the central nervous system, the hippocampus, were memories are encoded, contains receptors for leu-enkephalins. The remaining traumatic event is experienced and encoded under the influence of enkephalins and endorphins, thereby following a state dependent learning model.

Feasibility of Fiber Composite Laminates for Repair of Earthquake Damaged Masonry Buildings

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and
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Many low-rise masonry buildings were built worldwide prior to the enforcement of strict building codes with seismic resistance provisions. Many of these buildings do not comply with modern requirements for seismic resistance and are susceptible to damage or collapse in the event of an earthquake. Various retrofitting techniques have been devised over the years to strengthen or repair concrete masonry buildings. These techniques include external reinforcement such as steel plates and cables, pneumatically placed concrete, cast-in-place concrete, and others. The current techniques are not completely satisfactory, however.

The feasibility of a new retrofit/repair technique has been investigated experimentally. This new technique consists of resin impregnated fiberglass mats applied on the surface of the masonry wall. First, a coat of polyester resin is applied on the surface of the wall. Then successive layers of fiberglass mat and resin are laid. When the resin sets it forms a fiberglass composite laminate bonded throughout the surface of the wall. It can be applied on one or both sides of the wall. This technique has the advantage that the extra reinforcement adds very little weight to the building since the fiberglass composite has a very high strength-to-weight ratio.

Two series of preliminary tests demonstrated the feasibility of the new technique. In a first group of tests, 1/3-scale concrete block assemblages were tested under different loading conditions. The strengths in compression, in-plane bending, and out-of-plane bending of block assemblages reinforced with the composite laminates were 3 to 14 times greater than the corresponding strengths of unreinforced assemblages. In a second group of tests, 1/3-scale models of unreinforced masonry walls were subjected to in-plane, horizontal shear forces. The walls were first loaded to produce visible cracking. They were then repaired with the fiberglass composite laminates. After repair the walls were tested again under horizontal shear forces. The load carrying capacity of the repaired walls was 30% to 90% greater than the load carrying capacity of the original walls. The composite laminate was able to distribute the loads throughout the entire surface of the walls since no failure along the block joints was observed. Whereas in traditional repair techniques, load transfer is problematic. The deformation ability of the repaired walls was also considerably increased with the composite laminates, thus increasing their potential seismic resistance.

OXIDANT SUPPRESSION AND HYPEROXIA IN A LEUKOCYTE DEPLETED SKIN FLAP MODEL

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There are numerous applications for random pattern skin flaps in re-constructive surgery. Reasons for flap failure are multifactorial. Reduced blood flow, ischemia, and free radical production are well recognized problems following flap creation, each of which can contribute to failure. Though the effectiveness of radical scavengers has been demonstrated, the source or pathways that contribute to the radical pool remain unclear. This study proposes that neutrophils are a significant source of oxidant radicals and aims to examine the effects of two antioxidants and the use of hyperoxia in a neutrophil depleted skin flap model.

There were 100 subjects each of which received a full thickness random pattern skin flap. Subjects were randomly assigned to one of 10 treatment groups. Interventions included 1) the use of the antioxidants ascorbic acid and alpha tocopherol to combat toxic radicals and 2) the addition of a hyperbaric oxygen (HBO) environment. These interventions were made in various combinations. Neutrophils were reduced by injection of a commonly used anticancer agent. Outcome measures were 1) flap survivability at 7 days and 2) lipid peroxidation as a measure of tissue damage.

Results revealed increased survival of the flaps in neutrophil depleted subjects. The greatest survival was seen with the addition of alpha tocopherol (Vitamin E) whereas the effect of HBO and ascorbic acid (Vitamin C) alone contribute little to flap survivability. These initial results suggest that neutrophils do play a central role in the generation of oxidant radicals and that Vitamin E is a particularly effective radical scavenger.

The results of this investigation suggest a central role of neutrophils in the generation of oxidant radicals. That certain antioxidants appear to be more efficacious in a neutrophil depleted environment raises questions for further studies. The effects of hyperoxia are not universally beneficial and suggests the specificity of this intervention.

SPATIAL MEMORY: ENCODING AND RETRIEVAL IN YOUNG AND ELDERLY ADULTS

Presentation Preference: ***Poster***

Sandy S. Martin
Matthew J. Sharps

California State University, Fresno
Department of Psychology
Fresno, Ca. 93740-0011

Sandy Martin is pursuing a Master's degree in General Psychology.

The present study addresses the influence of distinctive contextual features at encoding and retrieval on a spatial memory task for young and elderly subjects. Based on previous research, it was predicted that visual distinctiveness at encoding and retrieval would enhance memory in the elderly. Distinctiveness should also create equal recall performance between elderly and young subjects.

Thirty two university students and 40 elderly people participated. Subjects were asked to recall the locations of 40 common, unrelated objects on the distinctive context, a painted, wooden model, or on the non-distinctive context, a black and white map.

Recall was lower for the elderly in all conditions except when visually distinctive features were present at both encoding and retrieval. In this condition, performance for the elderly was equal to the young.

It was shown that visually distinctive features may significantly enhance the recall performance of the elderly, to the degree that geriatric subjects can perform at the same level as college students. However, such visual support for recall must be present at both phases of the recall task, at encoding and retrieval. This indicates that memory aids for the elderly can be developed utilizing visually distinct cues, provided that these are used at all stages of the memory process.

CHARACTERIZATION OF PSEUDOMONADS FOR BIOLOGICAL CONTROL OF GREEN MOLD OF CITRUS

Oral presentation

Douglas K. McDowell (pursuing M.A. in Biology) at CSU, Fresno
School of Natural Sciences, Biology Department
2555 E. San Ramon Avenue, Fresno, Ca. 93740

Losses due to green mold decay of citrus fruit were estimated to be $50 million/year. Increasing health and environmental concerns about fungicide treatments threaten their use. Consequently, three *Pseudomonas* isolates were tested for biological control of *Penicillium digitatum*, which causes green mold decay of postharvest citrus fruit. The production of diffusible antifungal compounds was tested on potato dextrose agar or lemon albedo medium. The control of green mold decay on citrus was determined by inoculating 10^6 spores/ml of *P. digitatum* and 10^9 colony forming units (CFU)/ml of *Pseudomonas* onto puncture wounds and incubating the fruit at 20°C for 5-7 days. Bacterial virulence on citrus was determined by placing 10^7 CFU/ml of *Pseudomonas* into a puncture on the fruit followed by a 3 week incubation at 13°C or 20°C. None of the isolates produced diffusible antifungal compounds when grown in co-culture with the fungus, suggesting that control may have occurred by competition rather than by antibiosis. All three controlled green mold decay to significant and useful levels. *Pseudomonas syringae* 0485-10 exhibited severe virulence to fruit, precluding its use for control of green mold. Furthermore, this isolate grew at 37°C, and may be a potential human pathogen. *P. syringae* 01CC was moderately virulent to fruit, and requires further evaluation as a possible biological control agent. *P. sp.* #5 UCR was avirulent to fruit and is the most promising of the three isolates based on its effectiveness in reduction of fruit decay, conformity to Environmental Protection Agency recommendations and nonvirulence to at least two citrus species.

Origin

AUDITORY IMAGERY SUPPRESSES THE "CATEGORY SUPERIORITY EFFECT"

Poster

Celeste J. Merryman, pursuing M. A.
Janeen R. S. Antonelli, M. A.
Matthew J. Sharps, Ph. D.

Department of Psychology
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Research has shown that lists of words are remembered better when presented by categories than when presented in a random order ("category superiority effect"). This effect is suppressed when the words are replaced with pictorial representations. Recent research has shown that auditory imagery (e.g., characteristic sounds) may work similarly to visual imagery (e.g., words and/or pictures). If this is true, would a suppression of the "category superiority effect" occur with auditory items as it does with pictorial items?

We visually presented two lists of 40 items each. The "auditory" set included items which produce characteristic sounds: cow, jet, chainsaw, flute; the items of the "nonauditory" set do not: giraffe, raft, aspirin, corn. Sixty-four subjects (aged 18 to 33 years) were presented with auditory or nonauditory words or pictures, either blocked in their categories or shown in a random order. Subjects were instructed to remember these items. Following the presentation, subjects worked on an interpolated arithmetic task to prevent rehearsing. After two minutes, the subjects were asked to write down all the items they remembered.

Analysis of the data revealed a suppression of the "category superiority effect" for words and pictures of the "auditory" set as well as for pictures of the "nonauditory" set, thus supporting our hypothesis. This finding is explained in terms of Hunt and Einstein's information theory, which describes visual information as item-specific. Our findings indicate that information provided by sounds also may be item-specific, and may function similarly to visual images in recall performance.

The Prevalence of *Giardia* in Cattle Of Fresno County

Poster

Martha Mockbee

A Graduate Student Presentation
Dr. Michael Thomas and Dr. Wallace Harmon
Faculty Mentors

Departments of Animal Science and Biology
California State University, Fresno

Giardiasis is a naturally occurring intestinal disease that affects many species of vertebrates and is caused by the flagellated protozoan parasite *Giardia* . Studies concerning the zoonotic potential of *Giardia* have increased in recent years along with questions as to what species of animal might contribute to this potential as reservoirs for human infection. These studies predominantly involve companion animals (cats and dogs), small rodents, muskrats and beaver. Very few involve large domestic ruminants such as cattle and sheep. The objective of this study was to asses the prevalence of *Giardia* in Beef and Dairy cattle in four production practices located in three environmentally diverse areas of Fresno county.

Eighty animals were selected (40 adults and 40 juveniles) from each of the four production areas. Fecal samples were collected from each animal and two diagnostic methods were used to identify *Giardia* cysts. Zinc sulfate centrifugal flotation is used in veterinary medicine and a direct immunofluorescent antibody (IFA) technique is widely used in human medicine.

The prevalence of*Giardia* on foothill pasture calves was (46.5%) and adults (0%), irrigated pasture calves (28.8%) and adults (2.5%), Dairy calves (32.5%) and adults (2.5%). All of the high mountain (above 5000 ft.) pasture cattle tested negative .

This study has shown *Giardia* to infect predominately the very young. Only 2 of the 160 adult cattle in all areas were found to have patent infections. In juveniles, animals under 6 months old were more likely to test positive than animals over this age. Most of the animals that tested positive in this study were" asymptomatic", which means they had no classic signs of the disease, such as diarrhea, dehydration and listlessness. In giardiasis cyst release is usually intermittent. This and the state of the animals immune system (challenged or immature) could explain why the prevalence levels were so high in young animals and low in adults.

The potential for cattle to serve as reservoirs in the zoonosis will be addressed.

A Longitudinal Study of Anxiety: Noted Relationships Between Anxiety, Depression, Parenting Style, and Academic Achievement

Oral Presentation

Cherie Rector, R.N.-C, Ph.D.
Associate Professor, Department of Nursing, CSU, Fresno
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A longitudinal study of anxiety was conducted with 58 high school seniors (40 females, 18 males), tested originally for anxiety as 5th-graders (n=123) to determine the stability of trait anxiety during adolescence. Cross-sectional data was also collected on depression, parenting style, and achievement in relation to anxiety. The sample consisted of mostly Mexican-Americans (63.8%), born outside the U.S. (63.8%) from low to middle-low socioeconomic backgrounds (88%).

Trait anxiety increased over the period of adolescence, more so for females than males. A significant correlation was found between the two anxiety measures obtained nearly 8 years apart for the total sample and the female subsample. An interaction of gender by anxiety stability was found, with differential patterns of change noted for females and males. Current depression levels could be predicted by 1986 trait anxiety for the total sample and for female subjects, but not for males. Parenting subscales of psychological autonomy granting and involvement were also significant predictors to current levels of depression.

A path analytic approach was used to examine the fit of the data to an overall model based on learned helplessness theory, with 12th-grade GPA as the ultimate outcome. The findings for the total sample confirmed a predicted positive path between trait anxiety and depression and a predicted negative path between depression and GPA. Current trait anxiety and depression were found to mediate psychological autonomy granting and 1986 trait anxiety in relationship to GPA. Path analytic results differed for females and males, as no significant direct path from depression to GPA was found for females.

Contracts and the Prediction of Everyday Events.

Oral Presentation Preferred

Michael Owen Reed
(Doctoral Student)

California School of Professional Psychology-Fresno
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This study examines the relationship of four predicting factors to the dependent factor of human performance. These independent factors include; contracts, feelings, cognitions and awareness. The factors awareness and cognitions are comprised of two variables each. Feelings and contracts each have four variables and the dependant factor performance is comprised of six variables. Research has shown that these variables serve as good predictors of human performance.

Subjects were selected from the California School of Professional Psychology. This sample consists of eight adult male volunteers, four belonging to a control group, and four to a positive feedback group.

Upon entry into the experiment each subject completed a two-week journal indicating what they believed they would be doing during every 1/2 hour interval. This journal was then compared to the results obtained via a palmtop computer that they carried on their person the entire two-weeks. The computer randomly beeps at a 0-60 minute interval, at which time the subject is instructed to answer 15 questions that relate to the factors alluded to above.

Preliminary analysis suggests that all four independent factors have a positive correlation with human performance. This study will reveal the relative importance of these variables in predicting performances.

Discussion will focus on the implications of using a palmtop computer as a viable means of data collection to predict everyday human performances. It will also be proposed that this device and method of data collection will be extremely useful in the field of psychology, particularly in the therapeutic domain.

Sponsored by Merle Canfield, Ph.D.
Research Director
California School of Professional Psychology-Fresno

ANALYSIS OF THALLIUM AND ANGIOGRAPHY DATA FOR DETECTION OF CORONARY ARTERY DISEASE

Edgardo Resto[a], Prakash Deedwania, M.D.[b,c], Chris Engelman[c]
Donna Hudson, Ph.D.[b], Ronna Mallios, M.S.[b], Anamarie Graf, B.S.[b]

[a]Madera High School, [b]University of California, San Francisco,
[c]Veterans Affairs Medical Center, Fresno

Oral Presentation
High School Student Presenter

In previous work done by the investigators, a model was established which indicated that certain exercise treadmill testing (ETT) parameters can be successfully used to predict the degree of coronary artery disease (CAD). These parameters were derived from a sample of 82 patients seen at the Veterans Affairs Medical Center. A neural network model was derived utilizing 6 parameters which showed up to 86% accuracy in predicting coronary artery disease. In a subsequent study, additional cases were collected in order to strengthen the model. The project described here expanded the previous studies to include thallium and angiography results in addition to ETT. Data were collected from patient charts pertaining to three different tests: ETT, exercise thallium, and angiography. These tests are performed to determine the extent of CAD. The thallium and angiography tests are expensive, ranging from $700 to $2500. The ETT is less expensive, costing between $250 and $450. One goal of the study was to determine if the ETT could predict CAD as well as the other more expensive approaches.

Data were collected for 403 patients through chart review. The following parameters were recorded and entered into a database: heart rate and ST depression at one minute intervals throughout the test, total exercise time, blood pressure at beginning and end of test, maximum ST depression, time of occurrence of angina (pain), patient risk factors including family history of CAD and patient history of CAD, and the degree of coronary artery disease. The ST depression is an abnormality which is observed on the electrocardiogram (ECG).

Table I shows a summary of significant continuous variables which may be used to predict the presence of CAD from the ETT. The double product is the heart rate at the end of the test multiplied by the blood pressure at the end of the test.

Table I: Significant Continuous Variables

	No Disease	Disease	p-value
Total Exercise Time	6.4	5.8	0.0238
Peak Heart Rate	137.5	122.9	0.0000
Double Product	24550	21023	0.0001
Peak Systolic Blood Pressure	176.9	169.5	0.0448

The significant variables were consistent with the previous model. The increased number of patients will permit more in-depth analysis, including comparison of the ETT results with the thallium, and additional multivariate modeling.

FACE RECOGNITION: IS ATTRACTIVENESS A FUNCTION OF FAMILIARITY?

Presentational format: Poster

Jean M. Ritter
Kimberly Price
Davin Youngclarke

California State University, Fresno
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This study was designed to explore a hypothesis about why attractive faces are so appealing -- perhaps it is a function of familiarity. Recent evidence suggests that attractive faces represent the prototype or averaged members of the category of faces: Mathematical averaging of faces produces highly attractive composite faces. People may prefer attractive faces because they are good examples of a face and therefore look familiar. We tested this cognitive explanation for attractiveness preferences by determining whether attractive faces tend to be "recognized" even when they have never been seen before. Thirty photographs, previously rated for attractiveness, were briefly shown (1 sec each) to adult subjects. A second series of photographs composed of some faces from the original set and some new faces were then shown. Subjects were asked to indicate whether each face in the second series was new or had been seen before.

As predicted, attractive faces elicited a higher frequency of false positive recognition -- subjects reported recognizing attractive faces they had never actually seen. Interestingly, unattractive faces elicited a higher frequency of false negative recognition -- subjects failed to recognize previously seen unattractive faces. These results suggest that previously unseen attractive faces seem familiar to observers perhaps because these faces resemble the prototype. The observers may have failed to recognize briefly seen unattractive faces because processing such faces -- faces that are widely discrepant from the prototype -- may be effortful and require a more extensive exposure time. These results support the notion that familiarity is a basic component of attractiveness.

Geographic Information Systems (GIS) of the Chicxulub Impact Crater: The Geophysical Data Related to Multiple Cretaceous-Tertiary Impact Events

Presentation Preference: Oral

Thomas H. Sabatino
Pursuing a Masters Degree

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The extinction of approximately 70 percent of earth's species, including the dinosaurs, marks the boundary between the Cretaceous and Tertiary (K/T) periods 65 (+,- 1) million years ago. This study has three objectives. The first is to examine evidence for multiple impacts at the K/T boundary. Second is an examination of the Chicxulub impact site and it's ejecta in relation to other impact events. The third objective is to place the Chicxulub data in a GIS format allowing analysis not previously possible.

Map and Image Processing System's (MIPS) TNTview will be used for visualization and interpretation of satellite data (Landsat Thematic Mapper, TM), gravitational, magnetic, geochemical, hydrologic, and vegetation cover. These data sets will be layered in GIS format for analysis and correlation.

Work-in-progress has shown strong correlations between the gravity and magnetic data for Chicxulub. Geochemical evidence points to a strong possibility of multiple impacts as an explanation of the diverse geochemsitry found in the region of Chicxulub's ejecta. The author is now working with gravity data from two studies done this summer. Researchers at CalTec's Jet Propulsion Laboratory have promised to provide TM and Systeme Pour l'Observation de la Terre (SPOT) data for the study.

The K/T study is controversial. The geochemistry of Chicxulub covers a 300 Km diameter. The geochemistry of these hyper-velocity impact events is not well understood. There is evidence for Manson crater ejecta in the Beloc, Haiti formation. This GIS study hopes to aid in the interpretation of K/T events.

Thank you for your consideration of this presentation proposal.

Thomas Sabatino

Blood Glucose and Pulse Pressure Changes in Alcoholics Following Induced Hypoglycemia

Presentation Preference: Oral

Christopher Sabourin
California State University, Fresno
Ronald Kokes
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Lauri C. Gebhard
California School of Professional Psychology - Fresno

Mailing Address:
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4916 North Ninth Street #214
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Student presenter pursuing Bachelors degree

Current studies point to potential physiological differences inherent to alcoholism; however, some areas of inquiry are either marked by inconsistencies or are absent entirely. The present investigation compares both mean pulse pressure (difference between systole and diastole) and mean blood glucose between alcoholics and non-alcoholics. Sixty males, 30 diagnosed alcoholics (mean age 45.2) and 30 non-alcoholics (mean age 25.4), were measured at normal baseline for both measures. The prone males then ingested 100 grams of glucose to induce a hypoglycemic reaction. Measurements were taken every half-hour for five hours, totalling eleven intervals. Both mean pulse pressure and mean blood glucose level were not significantly different at baseline, however the mean across all intervals was significantly different for both: Alcoholics had lower mean pulse pressures and higher mean blood glucose levels ($p<0.05$). Pulse pressures were also significantly different between the two groups at both mean maximum and mean minimum ($p<0.05$). Furthermore, the first four mean blood glucose levels following ingestion were higher in alcoholics, resulting in an exaggerated maximum glucose peak. Moreover, the mean difference between individual maximum and minimum blood glucose levels was significantly greater in alcoholics across all intervals ($p<0.05$). Inasmuch as these reactions are multifarious, they deserve further examination.

RECENT AND HISTORICAL RAPTOR POPULATIONS IN FRESNO, MADERA, AND MERCED COUNTIES, CALIFORNIA

Poster Presentation

Tim Schweizer
David L. Chesemore

Department of Biology
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Roadside raptor surveys have historically been used to establish indices of relative abundance of wintering raptors between areas and time periods. This research establishes baseline data for migratory wintering raptors in the Central San Joaquin Valley in 1994 and compares these findings with previous surveys done here since 1970

Three survey routes, 62-, 82-, and 86- km long, were chosen that traveled east to west across Fresno, Madera, and Merced Counties. Each route was surveyed 6 times in January 1994 by two observers. Binoculars and a 20X spotting scope were used as aids to identification of raptors seen within 0.5 km of each side of the road being driven. Vehicle speed averaged between 8 and 16 kmph. An estimate of the raptor population for each species was calculated using the Bounded Count Method and an Index of Relative Abundance was calculated for each species seen during survey activities. Land use patterns since 1970 throughout the study area were determined from aerial photographs from the Agricultural Soil Conservation Stabilization Service (ASCS) and land use maps from the California Department of Water Resources.

Between 1970 to 1994, a significant increase in total acreage of orchards and vineyards and a significant decrease in total acreage of alfalfa/pasture occurred. Corresponding changes occurred in the raptor community. Red-tailed Hawks (*Buteo jamaicensis*) populations showed a significant increase in relative abundance from 28% to 48% ($p < .05$) while the indices for American Kestrels (*Falco sparverius*), 48% to 40%, and Northern Harriers (*Circus cyaneus*), 23% to 9%, declined significantly ($p < .05$). The populations of wintering Feruginous Hawks (*Buteo regalis*) and Swainson's Hawks (*Buteo swainsoni*) showed no significant change in abundance. Our finding Swainson's hawks during the 1994 survey may indicate a previously unknown population of this endangered species in the San Joaquin Valley.

DEPARTMENT STORE RETAIL MANAGERS: EDUCATION, EMPLOYMENT, AND JOB SATISFACTION

Oral

Gail D. Seymour
Dianne D. Dickerson

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Child, Family & Consumer Sciences Department
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Master of Science

The purpose of this study is to determine whether a significant relationship exists between job satisfaction of department store area managers and (1) demographic factors; age, marital status, parental status, (2) employment factors; prior retail work experience, current salary, current tenure, intent to leave, (3) educational experience; having a four-year degree, having taken a retail course in college.

The information for this study was obtained by a questionnaire which combined the Revised Job Descriptive Index (Smith, Kendall, and Hulin, 1969), the Job in General scale (Ironson, Smith, Brannick, Gibson & Paul, 1989), and questions developed by the researcher. Approximately 496 questionnaires were mailed to department store managers employed by one of five west coast department store companies.

Managers' job satisfaction was measured in five specific areas and in overall job satisfaction. The study found that managers were well satisfied with all areas except satisfaction with pay. Analysis revealed that a significant negative correlation exists between overall job satisfaction and age, and between satisfaction with supervision and age. Linear regression revealed a significant positive correlation between managers' satisfaction with pay and the managers' salary level.

While job satisfaction can not be used solely to predict specific behavior such as turnover, knowledge of employee attitudes regarding specific job aspects gives an employer information about what facets of a work situation need revision to reduce unwanted turnover. Educators need to provide students with a realistic view of professionals in retail through work/study programs, part-time work in retail, and meeting with retail managers in the classroom setting.

VERBAL AND VISUAL MEMORY IN HUMAN AGING

Presentation Preference: *Poster*

Matthew J. Sharps

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Although verbal memory is relatively preserved with age, our recent research indicates that visual memory may be relatively impaired, and that the elderly may use verbal, meaningful information to compensate for this deficit. The present study tested this hypothesis in spatial memory (recall of item locations) and nonspatial memory (recall of items themselves). In spatial memory, the elderly were shown to utilize distinctive cues to location to aid their memory relative to that of young adults. However, they were unable to do so in the presence of meaningfully related stimuli; relational information distracted older adults from a focus on the critical visual information. In nonspatial memory, it was shown that, contrary to young adults, elderly adults rely on meaning instead of pictorial detail when recalling pictorial stimuli; both for pictorial and verbal stimuli, the elderly performed better when the items were presented in meaningful groups, whereas for the young, such an effect was seen only for verbal stimuli.

These results show that the elderly attempt to compensate for visuospatial deficits in memory through the use of relatively intact semantic informational systems. As suggested above, this indicates that memory aids for the elderly should focus on the verbal, meaningful realm when possible. However, when this is not possible and an imageric focus is required, this should be conducted without reference to meaning or semantic factors, as these will distract the elderly and render the memory aid ineffective.

Dietary habits and nutrient intake during pregnancy in Fresno County Hmong population

Oral/Poster

Pouran Nowzari Sohrabi, EdD, MSPH, RD
Isabel Good, R.N., PHN
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Iron, folate and calcium are identified as critical in fetal development. Studies indicate that Southeast Asian immigrants have a low intake of these nutrients overall. The purpose of this local descriptive study was to assess the dietary habits of pregnant and postpartum Southeast Asian women to determine if local data substantiates the previous findings.

Fifty randomly selected women from among WIC, FUSD, HSA, and DSS clients participated in an interview conducted by a Public Health Nurse and a Hmong Health Education Assistant. The assessment tool was constructed to gather information on demographic data, cultural food habits, postpartum food practices, and a 24-hour dietary recall.

Data analysis revealed that 100% of the target population reported frequently consuming Asian/Hmong traditional foods and observing the traditional Hmong postpartum chicken/rice diet. Total energy consumption was in the range of 1600-2000 calories with meals consisting of white rice, green vegetables, some fruits, chicken, pork, beef, and rarely dairy products. Nutrient analysis based on 24-hour recall data revealed that more than 90% of the sample consumed less than 2/3 of the 1989 RDA for iron and folacin. Mean intake for iron and folacin was 43.6% and 34.4% respectively. Also mean intake of calcium was 41% for 50% of the sample population.

This descriptive information substantiates earlier findings and can be used to design appropriate interventions to address the dietary deficiencies and to incorporate iron, folacin and calcium rich foods in Southeast Asian traditional diet.

Changes in Self-Esteem during a Residential Camp Experience for Children with Asthma

Submitted for Poster Presentation

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Abstract

The self-esteem of children with asthma has not been widely researched. Psychoeducational programs educating asthmatic children on a variety of self-improvement areas has become the favored mode of treatment. The Harter Self-Perception Profile for Children has been a popular measure in assessing children's self-esteem.

Previous research at an overnight camp yielded significantly higher self-esteem scores on the Harter Self-Perception Profile for Children when they participated in psychoeducational self-esteem classes. Other research has suggested that males in general have higher self-esteem and that adolescents in general have lower self-esteem. The results of a study looking at the variables of age and gender would be beneficial in designing psychoeducational self-esteem classes for children with asthma attending an overnight camp.

It was hypothesized that 1) males will have higher self-esteem than females and 2) that older children will have a lower self-esteem than younger children. Children aged 10-13 years were administered the Harter Self-Perception Profile for Children before and after participation in a self-esteem psychoeducational class designed for children with asthma. The results were analyzed using ANOVA. The analysis yielded non-significant results which indicated age and gender groupings were adequate for programming of self-esteem classes. A measure of self-esteem for children with asthma appears to be needed.

NEUROPSYCHOLOGICAL METHODOLOGY PART 1: THE EFFECTS OF VARIED SUBJECT SELECTION PROCEDURES

Presentation preference: Oral

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AND
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ABSTRACT

Rational, rigorous subject selection procedures are the foundation of internally valid neurobehavioral research. A review of recently published neuropsychological research reports reveals considerable cross-institutional variation in subject selection procedures. To determine what effect such variation may have upon research results, the present study examines the performance of four subject groups on six neuropsychological measures. The groups selected for examination included: 1) normal controls as defined by a negative history for neuropathology, 2) pseudoneurologic controls as defined by positive neurologic complaints accompanied by negative neurodiagnostic test results, 3) presumed brain damaged subjects as defined by an unconfirmed history of neuropathology, and 4) brain damaged subjects as defined by neurodiagnostically verified brain damage. The neuropsychological measures chosen for study were the Speech Sounds Perception Test, the Tactual Performance Test, and the four forms of the Expanded Trail Making Test.

Initial inspection of the test data revealed distributions which were highly skewed and kurtotic. Thus, logarithmic transformations of the data were performed. One way analyses of variance (group by test) were performed for each neuropsychological instrument. Group means were then compared using the Scheffe method with Bonferoni corrections for multiple comparisons.

Across all neuropsychological instruments, the performance of verified brain damaged subjects differed significantly from that of normal controls. In one case (the Tactual Performance Test), the performance of verified brain damaged subjects also differed significantly from that of pseudoneurologic controls. With that one exception, the performances of pseudoneurologic controls and presumed brain damaged subjects did not differ significantly from those of either normal controls or verified brain damaged subjects.

These results suggest that much more rigor is needed in defining groups for comparison in neuropsychological research. Moreover, authors should be specific, in their reports, regarding their methods and criteria for subject selection.

The Effect of Summer Temperatures on Glucose Test Strips in Prehospital Vehicles

Presentation Preference: Oral

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Thomas R. Magill, M.D.
Herbert G. Bivins, M.D.

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Objective: To assess the reliability of the Accu-Chek Easy (Boehringer Mannheim) glucose test strips stored in Fresno County EMS vehicles during the summer months.

Methods: Eighteen unopened vials (50 strips per vial) of test strips were stored on a single ambulance over the 12 week period 7/20/94 to 10/12/94. Twice daily vehicular temperatures were recorded by paramedics and local climatological data was obtained by the National Weather Service. All testing was done in the open air by a single investigator using the same monitor. Three levels (low, mid and high) of a glucose testing solution were studied. Vehicle strips and control strips (stored at room temperature) were tested at one day, two, four, six, eight, and twelve weeks. Data were analyzed using the analysis of variance (ANOVA).

Results: Ambiant temperatures for the study intervals ranged from 52 to 106° F. Glucose strips stored in the vehicle generally measured higher compared with controls for all three glucose levels. None of the values, however, exceeded the respective ranges given by the manufacturer. Statistically significant differences ($p < .05$) were found for low and mid glucose levels at four, six and eight weeks and for high glucose levels at one day, two and eight weeks. The statistically significant differences ranged from 1.8 - 4.7 mg% for low, 2.6 - 7.7 mg% for mid, and 3.6 - 7.0 mg% for high.

Conclusion: Accu-Chek Easy glucose test strips stored in EMS vehicles during the summer may result in falsely elevated glucose readings as early as one day after storage. These effects, while statistically significant, are small and should not affect clinical decision-making in the prehospital care setting.

Spiders As Beneficials in Vineyards

Poster

Dr. Mark Mayse
Julia Tinker
Masters of Science

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ABSTRACT: Determination of biology and ecology of Cheiracanthium and Trachelas in vineyard agroecosystems was initiated using direct field observations. Efficacy of Cheiracanthium and Trachelas spiders as naturally-occurring biocontrol players was scrutinized. Experimental methods included: field observations using arthropod-neutral red lights, corrugated cardboard band traps, and grapevine canopy shakecloth techniques.

Results of studies initiated in 1994 encompassed a total of 31 hours of field viewing time, only 20% of which resulted in successful sighting of a spider. Cheiracanthium was spotted 92% of the time, while Trachelas was seen the remaining 8%. More juvenile than adult spiders were found in the first year of the project, and more females were found than males. The fact that morning observations appeared to involve less active spiders than did evening data collection suggests that these clubionid sac-spiders are more likely to be observed in the evening and that warmer, evening temperatures perhaps facilitated spiders' foraging. Both clubionid spiders would search leaves in the evenings.

Witnessing a spider eating a prey item was a rare event when compared to foraging and resting. When spiders encountered a leafhopper nymph, a quick dash, attack, and devouring of the prey would typically occur. Cheiracanthium (and Trachelas once) were occasionally found in a folded leaf within an opaque (presumably molting) web. In dramatic contrast, corrugated cardboard band traps and shakecloth sampling caught more Trachelas and Theridion than Cheiracanthium. The predominance of these spiders among the beneficial arthropod canopy communty clearly suggests that they can play an important role in the vineyard agroecosystem's natural biological control.

FOOD HABITS OF HARBOR SEALS NEAR MONTEREY BAY, CALIFORNIA

Oral

Trumble, Stephen J.

Harvey, James T.

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Masters

To address seasonal harbor seal (*Phoca vitulina richardsi*) food habits variations and pinniped-fishery interactions along the central coast of California, harbor seal fecal samples were collected from three major offshore haul-out sites near Monterey during 1991 and 1992. Prey items of harbor seals were compared with commercial fish and cephalopod catches in Monterey Bay.

Two hundred and twenty-two (222) fecal samples collected over a 12 month period near Monterey Bay, California revealed 2,233 individual prey items with 22 species and four genus identified. Based on mean index of relative importance (IRI) values, Loligo opalescens and Octopus rubescens, were the primary prey species throughout the year. Until these data, L. opalescens was not thought to be an important prey item for harbor seals in Monterey Bay. Seasonally important fishes were Sebastes sp., flatfishes (Pleuronectidae and Bothidae) and Chilara taylori. It was previously unknown the importance of hagfish in the diet of harbor seals in Monterey Bay, especially during autumn. Percent frequency of occurrence comparison between harbor seal prey collected from fecal samples in 1991and previously collected trawl data in Monterey Bay revealed significant correlation during summer, but not during winter.

No study to date has provided information on prey consumption for Pacific harbor seals that inhabit rocky substrata in the North Pacific.

MOTHER - PUP INTERACTIONS OF HARBOR SEALS NEAR MONTEREY BAY, CALIFORNIA DURING 1992

Poster

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Masters

Diel observations were conducted on harbor seal (*Phoca vitulina*) mother-pup pairs during the 1991-1992 pupping season at South Fanshell Beach, Monterey Bay California to examine diurnal and nocturnal suckling session duration and proportion of animals suckling per hour during lactation.

Maximum counts of mother-pup pairs, solitary pups, and total animals accompanied continuous scan sampling of suckling sessions.

Mean number of pups increased and female numbers decreased at night, presumably females were feeding at sea. During 184 hours of continuous scan sampling 636 suckling sessions were observed. No statistical difference was found between diurnal ($\bar{X}$= 295.83 s, SE = 233.13 s) and nocturnal hourly suckling session duration ($\bar{X}$= 309.15 s, SE = 216.24 s; t = 0.472, p>0.05). Mean proportion of animals suckling per hour was significantly greater for diurnal periods ($\bar{X}$= 0.51 h^{-1}, SE = 0.28^{-1}) compared with nocturnal periods ($\bar{X}$= 0.23 h^{-1}, SE = 0.19^{-1}; z = 3.35, p < 0.05). Overall proportion of animals suckling was 0.37 h^{-1}.

Total suckling per day (suckling sessions x proportion of animals suckling per hour) for diurnal (1.0h/24h) and nocturnal (0.46h/24h) was 0.74 h/ 24 h. Diurnal suckling was 117% greater than during nocturnal, which may prove important in energetic studies.

Beliefs that harbor seal pups must remain in close proximity to females during lactation may be an artifact of previous sampling solely during daylight hours.

THE FACILITATION OF INSTRUCTIONAL TELEVISION BY TECHNICAL OPERATORS

or

WHY THE SUPPORT STAFF IS INTEGRAL TO THE QUALITY OF BROADCAST INSTRUCTION

Presentation Preference: ***Poster***

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Instructional television, commonly called distance learning (because students at the remote sites are learning while being at a distance from the instructor), has become a new method of academic outreach. Through distance learning, schools may now efficiently provide classes for students who would otherwise be unable to attend due to the infeasibilty of the commute to the "live" classroom. In addition, instruction can now be delivered to more students by one teacher, due to the provision that the number of available "seats" in a class is increased in direct proportion to the number of distance sites made available. Current distance technology includes both two-way audio and video connections between the teacher and the outlying sites; students have a telephone connection that allows them to verbally interact with the teacher during the class presentation, as well as the teacher having a monitor where s/he can visually observe distance site students.

The intent of this study was to see if the knowledge and ability of the Master Control Operator (the person behind the scenes whose capacity is to control the various cameras and technological support equipment that are part and parcel of the instructional delivery) had an effect on the quality of instruction and presentation. Participants were university student-assistant-operators and the associated professors who perform broadcast classes. A survey was designed to measure the operator's experience in related fields and the training that they received, as well as the professor's desire to take advantage of the technology. The surveys were distributed to the distance learning faculty and their operators at CSU Fresno, with a response rate of approximately 90%.

It was found that, while the majority of operators were technologically astute, less than 40% of the broadcast professors were using their operator's expertise to the extent that they could. As a result, the aired class was not utilizing the technology and skilled operators, which in turn appeared to limit the effectiveness of the class presentation in its video format. Recommendations have been made for ways in which distance learning teachers could better utilize the expertise and technology provided for them through their master control operators.

RNA SPLICING ACTIVITY IS RESTORED TO A U1 snRNP-DEPLETED HELA CELL NUCLEAR EXTRACT BY THE ADDITION OF A CONCENTRATED CYANOBACTERIAL EXTRACT

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Presentation Preference: Oral

Introns are non-coding nucleotide sequences which interrupt the protein coding regions of a primary messenger RNA transcript. These introns are removed through RNA splicing within a structure known as the spliceosome. The principal components of this splicing body are small nuclear ribonucleoprotein particles (snRNPs). Four snRNPs -- U1, U2, U4/U6, and U5 -- are essential to the spliceosome if a splicing event is to occur. The existence of snRNPs in eukaryotes has been recognized for several years, and it was assumed that these particles were absent in prokaryotic organisms, since prokaryotes generally lack introns. However, recent investigations suggest that a particle with biochemical properties similar to the eukaryotic U1 snRNP exists in the cyanobacterium *Synechococcus leopoliensis*.

Using an *in vitro* RNA splicing assay, we have shown that the addition of a highly concentrated *S. leopoliensis* extract restores the ability of a HeLa cell nuclear extract, depleted of the U1 snRNP through antisense affinity depletion, to excise a 123 nucleotide intron segment from a transcript derived from the pcDNAI/AMP plasmid (Invitrogen). Thus, the U1-like particles identified in the cyanobacterium facilitate assembly of the spliceosome and exhibit activity similar to the eukaryotic U1 snRNP.

The existence of U1 snRNP activity in *S. leopoliensis* suggests an evolutionary precursor to eukaryotic RNA splicing material. Also, blood serum samples from medical patients with systemic lupus erythematosus (SLE) has been shown to contain antibodies specific to the U1 snRNP. The presence of particles similar to U1 in a distantly related organism provides the possibility of an antigenic source for the antibodies that cause SLE.

THE EFFECTS OF HYPERBARIC OXYGEN TREATMENT AND FREE RADICAL CONTROL ON TISSUE VIABILITY.

Brent Wilson, Christine Lopopolo, Gracie Azevedo, Mark Jacoby, Steven O'Hara, Richard Stewart, Kent Yamaguchi. Department of Biology, California State University, Fresno; VAMC; VMC, University of California, Fresno Medical Education Program, Fresno, CA.

Plastic surgeons often use a skin flap from an area adjacent to an injury to cover defects and aid healing. A problem often encountered with large flaps is partial death of the tissue. The goal of this study is to increase viability of the tissue by increasing the oxygen available to the tissue and decreasing free radical activity.

In this ongoing study we have used various combinations of three treatments. We hope to find the right balance of therapies that will yield the maximum tissue viability.

On each subject a three-sided, 3 X 12 cm. dorsal skin flap was cut, raised and replaced with surgical staples. One treatment variable was to increase the vascular oxygen content by means of a hyperbaric chamber with 100% oxygen. In a second treatment variable, Vitamins E, C and other free radical inhibitors were used. In a third treatment variable, to prevent free radical formation some of the subjects were treated with Cyclophosphamide. This drug drastically depletes the neutrophil count. Neutrophils are white blood cells active in the immune system and can be responsible for producing free radicals.

After seven days of treatment, biopsies were taken from four different locations, and then examined for free radical cell damage. An indicator of cellular breakdown is the presence of malondialdehyde (MDA). Myeloperoxidase (MPO) was also measured as a means of determining the activity of any neutrophils.

Results showed that surviving portions of the flap had lower levels of MDA and subsequently less cellular breakdown and that treatment with radical inhibitors further reduced tissue loss. Myeloperoxidase was higher in untreated subjects and treatments with radical inhibitor and neutrophil depletion resulted in reduced MPO and greater tissue salvage. Treatments aimed at reduction of free radicals were seen to result in improved flap survival and reduction in cellular breakdown. Neutrophils appear to play a major role and reducing their numbers or activity can aid in flap viability.

RETROSPECTIVE REVIEW OF PEDIATRIC CARDIOMYOPATHY PATIENTS IN FRESNO

Poster Presentation

Winter, S.C. MD, Jue, K.L. MD, Prochazka, J. MD, Linn, L.S., Winter, S.A., Tsai, P., Williford, R.

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This study reviewed pediatric cases that were diagnosed with cardiomyopathy at Valley Children's Hospital from 1/1/88 to 1/1/95. Pediatric cardiomyopathy is a rare condition which affects only an estimated 5,000 new patients a year in the U. S. Although many variables have been identified to cause cardiomyopathy, many patients etiologies are unknown. The reported mortality rate for this disease is 50% or greater. Charts of 30 patients with a diagnosis of cardiomyopathy were reviewed. Patients were excluded if they had any concurrent heart malformations.

The patients ages, at diagnosis, ranged from newborn to 14 years old. Of the 30 patients, 27 were identified with having a dilated type of cardiomyopathy, 2 with hypertrophic, and 1 with a mixed dilated and hypertrophic type cardiomyopathy. Fourteen patients were diagnosed as also having a metabolic disease. There were 7 with glutaric aciduria II, 3 with dicarboxylic aciduria , 2 with diabetes, 1 with lipid storage myopathy and 1 with 3-hydroxyl-acyl CoA dehydrogenase deficiency. Twenty-nine patients received L-carnitine treatment for durations of a few days to greater than a year along with standard digitalis and diuretic therapy. Plasma carnitine levels did not have to be abnormal for L-carnitine treatment to begin. At the last follow-up, 19 patients were living, 6 had expired from their cardiomyopathy, 2 expired from cardiomyopathy and another illness, 1 expired from unknown reasons, and 2 underwent heart transplants. In comparison with similar patients at other locations, Fresno patients survived longer.

PREVENTION OF PERITONEAL ADHESIONS

Oral

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INTRODUCTION: Peritoneal adhesions are the most common cause of small bowel obstruction. Several methods including irrigation of peritoneal cavity with heparin, PEG 4000, Dextran 40, and Ringer lactate, isolation of injured segments by Interceed and gelfoam and systemic application of dexamethasone and mast cell stabilizers have not been universally successful. The following study was carried out to prevent peritoneal adhesions.

METHOD: Peritoneal adhesions in 60 rats were created by making a one cm incision and closure of the cecum. Six groups, ten rats in each group were used. Five groups were treated with Urokinase, PEG 4000, promethazine, gelfoam, indomethacine, and the last group was a control. The rates of adhesion were measured and compared to the control.

RESULTS: Adhesions occurred in all groups. No medicine prevented the adhesion completely. Adhesions of abdominal wall incisions occurred in 100% of Urokinase and PEG 4000 groups while this rate was 78%, 67%, 40% and 45% in promethazine, gelfoam, indomethacine and control groups respectively. Adhesion to cecal incision occurred in 100% of Urokinase, gelfoam, indomethacine and control groups while 89% and 78% in PEG 4000 and promethazine groups respectively. Adhesions were mild in promethazine group.

CONCLUSION: This study indicates while no treatment completely prevented peritoneal adhesions, a combination of promethazine and indomethacine would be a promising future study to reduce the rate and intensity of peritoneal adhesions.

Why Grape Puffs are Puffy ?
-An Analysis of MIVAC Temperature Curves

Presentation Preference: Poster

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Use of microwave heating in a vacuum environment exhibits potential for dehydration of grapes and other food products. This process - known as MIVAC, removes water from grapes rapidly, and preserves most of the fresh character of the product including color, shape, and flavors without the use of preservatives. Grapes were successfully dehydrated using microwave energy in a vacuum to produce a puffed, crispy grape. The macro appearance as well as the micro-structure of puffed grapes are significantly different from those of sun dried raisins. Such differences directly affect the taste and quality of the products and should be explained with the heating and dehydration mechanisms for better process controls. Since direct temperature measurement present a technical challenge in a microwave environment. Experimental studies of the temperature history and temperature distribution in relation to the product textures are fairly limited. A theoretical analysis is performed to aid the explanation of the textural differences.

Temperature curves of MIVAC heating were studied and analyzed. They follow a trend very similar to that of heating a body of water. In the initial stage, the temperature rises linearly to a 'boiling' point. Temperature stays around this point until all the 'extractable' moisture have vaporized. The product temperature again rises in a linear fashion but with a slower rate. The principle of energy conservation is applied to describe each stage in thermodynamic terms. Such analysis led to important insights of the MIVAC heating process, the moisture transport mechanism, and their effects on product textures.

Scanning electronic microscopic (SEM) textural images of grape puff and raisin were studied in relation to the afore-mentioned analysis. Sample calculations were carried out to study thermal characteristics of the product, e.g..: specific heat, heat of vaporization, coupling coefficient, dehydration rate, moisture content, etc..

This analysis has led to the following conclusions: (1) the coupling coefficient is a strong function of the moisture content; (2) Grape puff is puffy due to localized heating, absence of contiguous moisture migration path, as well as the hardening effect of residual sugar; and (3) the taste of MIVAC products may be successfully 'engineered' by considering factors, such as: textural strength, sizes, shapes, and pre-processes.

FIELD DETERMINATION OF AGRICULTURAL PUMPING PLANT ELECTRIC MOTOR EFFICIENCIES

BY
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This report meets a contractual obligation between the California Institute for Energy Efficiency and the Center for Irrigation Technology, CSUF. It documents and summarizes a two-year study of "Field Determination of Agricultural Pumping Plant Electric Motor Efficiencies" which was completed in August 1994. The uniqueness of the project lies in the application of recently developed methodology for field determination of electric motor efficiencies. The application of this technology to industrial motors led to speculation that some agricultural pumping plant motors might be operating at sub-optimal efficiency.

Project objectives are summarized as follows:

1. Survey and characterize the agricultural pumping plant motor population in California.

2. Using proven methodology, conduct field tests on a representative sample to determine average operating efficiencies.

3. Analyze the survey and field test data to identify causes for inefficiency in pumping plant motors.

4. List specific interventions that could improve efficiency and frame the economic considerations.

5. Recommend programs and policies to increase motor efficiencies, thereby impacting both the operator's power bills and the utilities connected load.