

# **NORTHWEST MISSOURI STATE UNIVERSITY**

## **ABSTRACTS OF COMPLETED RESEARCH PROJECTS APPROVED BY FACULTY RESEARCH COMMITTEE PERIOD FALL 2007 -**

Northwest Missouri State University budget grants for Faculty Research began in 1974. Beginning fall 2007 the ability to post abstracts when received was granted to the Graduate School.

In fall 2007 the Faculty Research Committee approved a standardized reporting format for Faculty Research and Applied Research and Projects abstracts.

### **ABSTRACTS**

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**Edwards, Carla Ph.D. Associate Professor, Department of Psychology, Sociology, and Counseling; Hendrix, Rebecca, Ph.D. Assistant Professor Department of Psychology, Sociology, and Counseling; Reinert, Fr. Duane, Ph.D. Full Professor, Chairman of the Counseling Center at Conception Seminary College**

**“Childhood Attachment, Childhood Trauma, and Religiosity: An Empirical Study”  
Spring 2007**

The following abstracts describe the final results of the research which resulted in two completed projects.

#### **Abstract I**

The authors summarize the growing body of the attachment theory empirical research literature in the psychology of religion and suggest implications for counseling, including practical suggestions for case conceptualization, possible spiritual interventions, and ethical guidelines for practice. Attachment theory provides a fertile framework for counselors to conceptualize the religious and spiritual experiences of Christian clients whose spirituality involves the belief in and relationship with a personal God.

#### **Abstract II**

Guided by attachment theory, we explored the relationship between verbal, physical, and sexual abuse and attachment to God, as well as other measures of religiosity. Each form of abuse was related to various negative effects. Attachment to parents moderated the relationship between attachment to God and God concepts among the verbally abused, but not among the physically abused. Whether parental attachment plays a moderating role among the sexually abused is not clear. Certainly sexual abuse had the most detrimental effect on attachment to God and other religiosity variables, including the strength of one’s faith. Our findings support attachment theory’s prediction that a secure attachment to parents provides the necessary context for socialization into religion, whereas insecure attachment does not. In fact we found evidence that, for the insecurely

attached, the more religiously active the father was during participants' childhood, the more they perceived God as controlling and less loving.

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Kurt A. Haberyan, Professor  
Department of Biological Sciences

Final Report

**Distribution of Diatoms on Microscope Slides: a Micro-GIS Application**

Faculty Research Project  
Funded on January 30, 2006  
Extended by one year on January 18, 2007  
Award Amount \$722.72  
Completed September 12, 2007

**Findings**

We investigated the effect of frustule morphology on the distribution of diatoms on microscope slides. Eight diatom morphotypes of seven species (in the genera *Acnanthidium*, *Aulacoseira*, *Chaetoceros*, *Stephanocyclus*, *Surirella*, and *Thalassiosira*) were selected to represent a range of morphologies (e.g. size, shape, length, width, spines), processed in nitric acid (or Lugol's for *Chaetoceros*), mixed into a single assemblage, dried on a coverslip, and mounted. On the resulting slide we recorded, to the nearest 50  $\mu\text{m}$ , the location of all 1664 valves in 844 groups. The average Nearest Neighbor Index using simple Euclidean distance was calculated for each group using geographic information system software. Analysis revealed that most of the morphotypes were distributed randomly. However, two morphotypes were not distributed randomly, but rather tended toward a clustered spatial distribution ( $0.05 < p < 0.10$ ): *Acnanthidium exiguum* tended to cluster in groups across the entire slide, while *Chaetoceros mullerii* was found predominantly near the margins. This non-random distribution of *Chaetoceros* seems to be due to the presence of either long spines or of residual cytoplasm (due, in turn, to treatment with Lugol's). Because two morphotypes were non-randomly distributed, distal and central transects were not representative of the entire slide; of the 43 transects, Transects 13 and 29 were the most representative (proportional similarity  $\geq 89\%$ ).

**Recommendations**

Investigators must not assume that frustules are randomly distributed on microscope slides. When counting slides of air-dried diatoms, we recommend that counting begin with transects that are one-third and two-thirds of the distance across the slides.

**Resulting Presentations**

Results were presented at the North American Diatom Symposium, Douglas Lake, Michigan, September 7-12, 2007. Preparation of manuscripts continues, with an anticipated submission date of March 31, 2008.

**Expense Summary**

Amount of grant .....	\$722.72
Supplies: 9 diatom cultures (\$30 each, + \$20 s/h) .....	<u>290.00</u>

David E. Colt  
Assistant Professor/Head Athletic Trainer  
HPERD/Athletics

**The Relationship and Predictive Power of Critical Thinking Skills Scores to NATABOC Examination for Athletic Training Performance Scores**

Applied Research Grant  
Awarded March 2006  
Amount Awarded: \$2,098.20  
Project completed: November 9, 2007

**Findings**

Cronbach's Alpha revealed the reliability of the CCTST-2000 with a satisfactory level of internal consistency. Independent *t* testing determined that those candidates passing the CE had higher overall critical thinking skills and higher scores in the subscale areas of inference and deductive reasoning. It was determined by Pearson Correlation that correlations existed between:

1. CE written section scores and CCTST total score and inference and deductive reasoning subscale scores.
2. CE written section scores and CCTST inductive reasoning subscale scores.
3. CE practical section scores and CCTST inference and deductive reasoning subscale scores.
4. CE written simulation scores and CCTST inference and deductive reasoning subscale scores.

It was determined by multiple stepwise regression that written and practice section scores increased when deductive reasoning scores increased while written simulation scores increased when inference subscale scores increased. Finally, discriminant analysis generated one significant function that predicted success in passing the CE by having higher inference subscale scores and lower inductive reasoning scores. Conversely, lower inference subscale scores and higher inductive reasoning score predicted not passing the CE.

**Recommendations for Educators and Students**

1. Athletic training education programs should examine the methods used to teach athletic training students.
2. Athletic training educators should know how to teach students the skills of critical thinking as they pertain to the profession of athletic training. Special attention should be made to the development of the skills of inference and deductive reasoning. Development of critical thinking

- skills will enhance the ability of athletic training certification candidates to pass the CE.
3. Athletic training students should know their personal critical thinking skills and attempt to improve in areas that are weak.
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### **Researchers**

Yanfen Le, Ph.D., Assistant professor of Geography

Wenlong Zheng, Ph.D., Web Manager of Information System

### **Project title**

A Hybrid Feature-Based Temporal Framework for Fields and Objects

### **Type of grant - Date granted - Amount approved - Date completed**

Type of grant: faculty research

Date granted: March 16, 2007

Amount approved: \$1300.00

Date completed: December 22, 2007

### **Findings and recommendations.**

Geographic data are commonly represented in object or field. Fields are better for continuous phenomena, and objects are better for discrete features. This dichotomy has been extended from space to space-time. So far, almost all spatio-temporal representations are based on pure object- or field-view of the space. However, there exist phenomena with both object- and field-like characteristics in reality, i.e. weed patches, and the change in both forms is important in better understanding the processes. For example, a weed patch may expand/shrink in size and/or vary in density. Therefore, a temporal geographic data model capturing only one form cannot represent the entire process.

We propose, in this study, a hybrid featured-based temporal framework to conceptualize the dynamics in phenomena that experience change in both object- and field-form. This representation is feature-based since each occurrence of the phenomenon is treated as a feature, which has space, themes, and time dimensions. It is called hybrid because its spatial information can be represented in object and/or field. This framework can be implemented in Oracle<sup>®</sup> Object-Relational schema. Oracle<sup>®</sup> 11g, an Object-Relational Database Management System (ORDBMS), provides abstract data types of SDO\_Geometry and SDO\_GeoRaster, which can be utilized for feature geometry of object and raster for field-like attributes, respectively. The entire process of a phenomenon is represented in one record under this OR schema.

Since no existing geographic information systems (GIS) can support a table with both object- and field-information, we develop a temporal GIS for visualization of a status and a process. This study contributes to temporal research in GIScience. In the future, spatial-temporal analysis of such hybrid data shall be explored to support the literature.

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**Researcher's (s') Name, Title, Department Name**

Rebecca Hendrix, Assistant Professor  
Department of Psychology/Sociology/Counseling

Alisha Francis, Assistant Professor  
Department of Psychology/Sociology/Counseling

### **Title of Research**

Student and Faculty Perceptions of Undergraduate Research Conferences

**Type of Grant:** Faculty Research Grant

**Date Granted:** February 2, 2007

**Amount Approved:** \$318

**Date Completed:** February 19, 2008

### **Findings and Recommendations**

By participating in research, students gain several skills: research techniques, written and oral communication, preparation and submission of manuscripts (Burns, 2006; Landrum, 2006). In addition, such involvement leads to collaboration with professors that are helpful in getting letters of reference (Burns, 2006). Such students are often encouraged to present their findings at conferences, but little research has been performed looking at their satisfaction and learning from this experience. The current project used online surveys to ask students and faculty about the goals they sought in participating in undergraduate research conferences.

Sixty-one participants (17 faculty, 37 undergraduates, 5 graduate students, and 2 other attendees) responded. Students perceived research design as positively related to critical thinking,  $r(30) = .596$ ,  $p = .000$ , analysis/interpretation,  $r(30) = .443$ ,  $p = .011$ , communication,  $r(29) = .371$ ,  $p = .04$ , and professional development,  $r(29) = .600$ ,  $p = .000$ . Professional development was related to critical thinking,  $r(29) = .600$ ,  $p = .00$  and communication,  $r(28) = .457$ ,  $p = .011$ . Finally, analysis/interpretation was related to communication,  $r(29) = .433$ ,  $p = .015$ .

Faculty perceived critical thinking as positively related to analysis/interpretation,  $r(12) = .602$ ,  $p = .023$ . Additionally, professional development was related to analysis/interpretation,  $r(11) = .684$ ,  $p = .01$ , and communication,  $r(11) = .708$ ,  $p = .007$ .

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## **Applied Research Grant Final Report**

### **Researcher's(s') Name, Title, Department Name**

Dr. Jackie Kibler, Assistant Professor and Dr. April Haberyan, Assistant Professor  
Department of Psychology, Sociology, and Counseling

2340 Colden Hall/2370 Colden Hall  
562-1852/562-1305

**Project Title.**

Suicide Prevention Training for Resident Assistants: Results of the Northwest Training Model

**Type of grant - Date granted - Amount approved - Date completed**

1. Category Types: 1.3.2. foster implementation and assessment of key quality indicators within departments/units; 1.3.4. request funds to use as match for grant proposals submitted to outside agencies; or 1.3.5. otherwise meet the definition/purpose as identified in 1.1.
2. Date granted: Fall 2007
3. Amount approved: 2750.00
4. Date Completed: Spring 2008 (ACA Conference March 26-31; Honolulu, Hawaii)

**Findings and recommendations.**

The Northwest Model to Suicide Prevention is based on a comprehensive review of the literature, research, and observations of individuals struggling with issues of suicide. The change in knowledge from a suicide prevention training program with Resident Assistants was evaluated. The results of the SPEAKS-S (SAMHSA, 2006) pre/post-test data indicated that participant knowledge regarding suicide and suicide prevention increased after participating in the training session. Knowledge on two specific items decreased slightly on the post-test which may indicate that those particular items need to be highlighted differently in future training sessions. Anecdotal reports from Residential Hall staff have indicated that the training sessions have helped to alter practices in the residence halls. Prior to these training sessions, there were reports of RAs maintaining "suicide watches" with students in crisis and postvention efforts that involved the unintended sensationalizing of suicide attempts. Anecdotal reports indicate that these practices are no longer occurring and RAs have a better understanding of how to handle residents in crisis.

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## **Applied Research Grant**

### **1. Researchers' Name, Title, Department Name**

Dr. Yi-Hwa (Eva) Wu, Assistant Professor and Geo-Tech Director,  
Geology/Geography, GS 1075, X 1869

Dr. Ming-Chih Hung, Assistant Professor, Geology/Geography, GS 1337, X 1797

### **2. Project Title**

Creating a Kansas City digital aerial photo database

### **3. Type of grant - Date granted - Amount approved - Date completed**

Applied Research, Spring 2007 (2006 - 2007 calendar year), \$1200

### **4. Findings and recommendations.** (Be brief, not to exceed 300 words)

Printout format aerial photos were purchased from funding of a previous project. They were scanned by Geo-Tech Service in Department of Geology/Geography with funding from this project. Each printout aerial photos came with a set of coordinates to indicate its center location. All of these coordinates for all of these printout aerial photos were delivered in a plain text file. This plain text file is converted to dBase III format, and then imported to ArcGIS software to create a point shapefile based on each aerial photo's X and Y coordinates.

A VBA program was developed inside ArcGIS environment. This VBA program allows users to click on the screen and it will bring out the aerial photo whose center is nearest to the clicked location (Nearest Query) or all of the aerial photos whose spatial extent includes the clicked location (Within Query). With these identified aerial photo, users could easily go to aerial photo boxes or file cabinet and retrieve the desired aerial photos. This process greatly improves the efficiency of retrieving aerial photo for various purposes.

The findings were presented in the 2008 AAG conference. The reference to the presentation is as follow:

Wu, Y.-H. & Hung, M.-C., 2008, A Simple Aerial Photo Database Query Interface to Facilitate Ground Truth Assessment, Presented at the Association of American Geographers (AAG) 104th Annual Meeting, Apr. 15-19, 2008, Boston, MA, USA.

Recommendation for further analysis is to take advantages of these aerial photos already in digital format, such as measuring building heights, which traditionally requires a lot of labor with printout format aerial photos or a lot of digital image process with digital format aerial photos, both with special skills.

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