

# **SCiP 2007**

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# **Notes from the Program Chair**

Christopher R. Wolfe

Hello and welcome to Long Beach. It has been a privilege for me to oversee the organization of this year's program. With 50 talks, 5 symposia, and 7 posters, our program this year is one of the largest and most diverse in recent SCiP history. Thanks are due to both Kim Vu and Roman Taraban for their help in putting the program together. Mary Ngo and Beth Creekmur are two student volunteers who are helping out on the registration desk and with other conference activities; their assistance is also very much appreciated. I'd also like to thank Kim Vu, Ulf-Dieterich Reips, Michael Schulte, Roman Taraban, Joseph Magliano, Ping Li, Katja Wiemer-Hastings, Robert Crutcher, Chris Wolfe, and David Washburn for reviewing submissions to this years' conference. Please enjoy your time and please be sure to visit our vendors!

Cinnamon Nemec

# Welcome from the President



Welcome to the 37th annual meeting of the Society for Computers in Psychology. Over the years the Society has stayed true to its primary mission to "increase and diffuse knowledge of the use of computers in psychological research" – and this year is no exception!

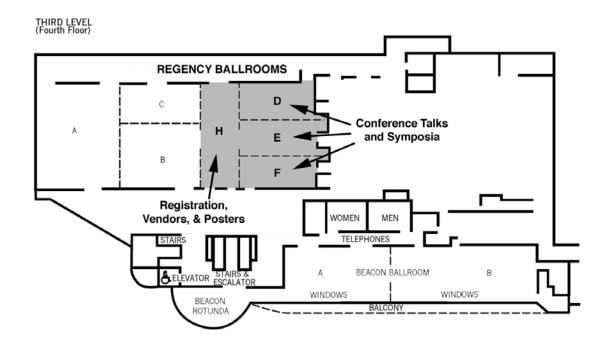
We are honored to have Valerie Reyna as our keynote speaker, and grateful to the organizers of the symposia for their thoughtful planning and hard work. Thanks to all of you who are sharing your research and insights at this conference. I hope you find this meeting informative and beneficial to your work and interests, and above all, an enjoyable time with colleagues. I would like to extend special thanks to Xiangen Hu, our webmaster, for his continuous efforts to keep the Society visible to the world over the Internet, to Gary Bradshaw and Kim Vu, Conference Chair and Assistant Chair, respectively, and to the Steering Committee and Associates for their assistance and guidance throughout the year.

The Society sincerely appreciates the support given to our conference by the vendors. Be sure to visit their tables and say hello.

Enjoy SCiP 2007 and your visit to Long Beach!

Roman Taraban

# **Conference Floor Map**



7:30 am Registration, Refreshments (coffee and treats) –Regency Ballroom H					
Regency Ballroom D Regency Ballroom E		Regency Ballroom F			
7:55 – 9:15 – Web-Based Research chair: Chris Wolfe	7:55 – 9:15 – Education & Instruction I chair: Joseph Magliano	7:55 – 9:15 – Language and Modeling chair: William Maki			
7:55 Landers 8:15 Schulte-Meckenbeck & Murphy 8:35 Chambers, Vu, Proctor, & Cho 8:55 Wolfe, Carey, & Wade	<ul> <li>7:55 Boonthum, Levinstein, Pillarisetti &amp; McNamara</li> <li>8:15 Kurby, Bellissens, Pillarisetti, Rowe, Magliano, &amp; McNamara</li> <li>8:35 Bellissens, Duran, Pillarisetti, &amp; McNamara</li> <li>9:30 Magliano, Gilliam, Millis, McNamara, Kurby, Boonthum, &amp; Levinstein</li> </ul>	7:55 Jones 8:15 Larson, Britt, van den Broek, & Kendeou 8:35 Maskit & Bucci 8:55 Maki & Buchanan			
9:15 – 10:35 – Computer Research Tools chair: Jonathan Vaughan  9:15 Ray & Ray 9:35 Dixon 9:55 Vaughan, Rosenbaum, & Linsley 10:15 Westbury	9:15 – 10:35 – Education & Instruction II chair: Kay Livesay  9:15 Arnott, Hastings, & Allbritton  9:35 Davis & Livesay  9:55 Naumann, Wechsung, & Krems  10:15 Paré & Joordens	9:15 – 10:35 – Symposium  "Psychophysical Techniques Examining the Social Psychology of Race and Racial Identifications"  Organizer: Otto MacLin			
10:35-10:45 – Break. Visit with vendors, view posters in Regency Ballroom H					
10:45 – 12:05 – Symposium  "Precision Psychological Research in a World of Commodity Computers."  Organizer: John Krantz	10:45 – 12:05 – Education & Instruction III chair: Ulf-Dietrich Reips  10:45 Plant, Simpson, & Trapp 11:05 Storey, Hastings, & Britt 11:25 Kopp, Storey, & Wiemer-Hastings 11:45 Funke & Reips	10:45 – 12:05 – Cognitive & Quant Models chair: Andrew Heathcote  10:45 Brou, Doane, & Bradshaw 11:05 Brunstein & Gonzalez 11:25 Heathcote & Bohlscheid 11:45 Sheu, Lee, & Shih			

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12:0	15-	I : I (	II — I	Lunch

1:10 - 2:30 - Symposium:

1:10 – 2:30 – Symposium:

1:10 - 2:30 - Symposium:

"E-Prime 2.0 Professional – Improving the power, precision, and ease of use of a proven research standard"

"Co-occurrence and lexical organization"

"Apparatus innovations and the shifting landscape of psychological research"

Organizer: Chris Westbury

Organizer: David Washburn

Organizers: Walter Schneider, Anthony Zuccolotto, & Amy Eschman

# 2:30 – 3:00 Poster Session and Refreshments in Ballroom H cookies and drinks

Peterson, Trinkner, MacLin, & MacLin;
 MacLin & Dixon;
 Bradshaw & Crutcher;
 LaMuth;
 Hao, Shu, Xing, & Li;
 Strybel, Vu, Battiste, & Johnson;
 Murphy.

# 3:00-4:00 – Keynote Address in Regency Ballroom C

# Valerie Reyna

"Modeling the Mind in Fuzzy-Trace Theory, with Implications for the Human-Computer Interface"

# 4:10-5:10 – Presidential Address in Regency Ballroom C

# Roman Taraban

"Research as Instruction – Instruction as Research."

# 5:10-5:30 – Business Meeting Regency Ballroom D

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7:55 – 9:15 am chair: Christopher Wolfe

# 7:55 TREND: A Tool for Rapid Online Research Literature Analysis and Quantification

Richard N. Landers, University of Minnesota, rlanders@unm.edu

The Research Explicator for oNline Databases (TREND) tool was developed out of a need to quantify large research literatures rapidly and without errors based upon online research database output. By parsing this output with TREND, a researcher can extract the most commonly cited articles, the most frequently published authors, a distribution of publication dates, and a variety of other information from a literature several hundred to several thousand articles in size in a matter of minutes. This tool thus enables a substantial leap in productivity for researchers, especially when venturing into new areas of interest. Usage and implications are discussed.

### 8:15 The Collection of Process Data Via the Internet: An Overview of Different Methods

Michael Schulte-Mecklenbeck, University of Bergen, research@schulte-mecklenbeck.com Ryan O. Murphy, Columbia University, rom2012@columbia.edu

In this talk we want to give an overview of different tools for collecting process data via the Internet. Getting a better insight into the actual actions a participant performs during an experiment gives an additional layer of information that helps building better models of (online-) behavior. The examined methods include recordings of mouse-movements, text-queries to databases or the building processes of knowledge networks. Different methods to visualize gathered data will be discussed.

# 8:35 Influence of the Privacy Bird<sup>TM</sup> User Agent on User Trust of Different Web Sites

Vanessa Chambers, California State University Long Beach, vchamber@csulb.edu Kim-Phuong L. Vu, California State University Long Beach, kvu8@csulb.edu Robert W. Proctor, Purdue University, proctor@psych.purdue.edu Dongbin Cho, Purdue University, tobin@psych.purdue.edu

With the increasing growth of Internet commerce, online fraud accounts for as much as 20% of identity theft cases today. In this study, Privacy Bird<sup>TM</sup>, a program that warns users of privacy preference violations, was used to evaluate its influence on user trust of financial, retail, and social networking websites. Trust ratings and likelihood to perform transactions were assessed for both familiar and unfamiliar websites in each category and for each level of warning from Privacy Bird. Privacy Bird significantly reduced trust and willingness to provide financial information to websites regardless of familiarity.

# 8:55 The Effect of Prior Technology Use On Web-Based Interventions

Christopher R. Wolfe, Miami University, wolfecr@muohio.edu JoAnne C. Carey, Cincinnati Children's Hospital Medical Center, Joanne.Carey@cchmc.org Shari L. Wade, Cincinnati Children's Hospital Medical Center, shari.wade@cchmc.org

We examined prior technology use in an online family problem solving intervention (OFPS) and an Internet Resource Intervention (IRI) for pediatric brain injury. With the OFPS, depression and anxiety improved significantly more among technology using families than non-technology users. Lack of prior home computer usage and non-adherence were predictive of anxiety at follow-up. The IRI was not globally effective. However, controlling for prior depression, age, and technology at work, families with technology experience at home reported significantly greater improvements in depression than families without prior technology at home. Individuals with limited computer experience may require additional assistance to increase adherence.

# 7:55 Developing Computer Based Learning Environments

Chutima Boonthum, Hampton University, chutima.boonthum@hamptonu.edu Irwin Levinstein, Old Dominion University, ibl@cs.odu.edu Srinivasa Pillarisetti, University of Memphis, s.pillarisetti@mail.psych.memphis.edu Danielle S. McNamara, University of Memphis, d.mcnamara@memphis.edu

The purpose of this talk is to share some of our experiences and resulting ideas concerning the development of Computer Based Learning Environments (CBLEs). Anticipating an increase in CBLE development and having been involved in CBLE development over the last decade, we propose to initiate a discussion on the issues encountered while developing CBLEs, potential solutions to those challenges, and the phases of testing that are necessary when developing CBLEs. Specifically, we will discuss issues regarding four general topics: a) the phases of CBLE development, b) the role of theory and pedagogy in making development decisions, c) the phases of testing the effectiveness of CBLEs, and d) challenges encountered when designing CBLEs for classroom environments.

Regency Ballroom E

# 8:15 Training readers to paraphrase: Adding adaptive training to iSTART.

Christopher A. Kurby, University of Memphis, ckurby@mail.psyc.memphis.edu
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Srinivasa (Pavan) Pillarisetti, University of Memphis, s.pillarisetti@mail.psyc.memphis.edu
Michael Rowe, University of Memphis, mprowe@mail.psyc.Memphis.edu
Joseph P. Magliano, Northern Illinois University, jmagliano@niu.edu
Danielle S. McNamara, University of Memphis, d.mcnamara@mail.psyc.memphis.edu

Many high school students have difficulty paraphrasing what they are reading. The goal of this study was to examine the effectiveness of a new iSTART module that provides extended interactive practice with paraphrasing. Students received self-explanation training through the iSTART system either with or without this new module. Results indicated that the effectiveness of interactive paraphrase training depends on reading skill. Contrary to expectations, skilled readers showed improvement in self-explanation quality after interactive training in paraphrasing, whereas less skilled students did not. Skilled readers also showed an increase in paraphrasing as measured by R-SAT, an automated reading strategy assessment tool.

# 8:35 iSTART: Effect of text difficulty on self-explanation strategies

Cedrick Bellissens, University of Memphis, mcbllssn@memphis.edu Nicholas D. Duran, University of Memphis, nduran@memphis.edu Srinivasa Pillarisetti, University of Memphis, s.pillarisetti@mail.psyc.memphis.edu Danielle S. McNamara, University of Memphis, d.mcnamara@memphis.edu

We examined self-explanations strategies as a function of text difficulty, sentence difficulty, prior knowledge, and reading skill. Computational techniques were developed to manipulate the relative difficulty of texts and inter-sentence dependencies within the texts. Self-explanation complexity increased with knowledge and text ease. More paraphrases were generated when the reader had less knowledge about the topic and when text was more challenging. More elaborations were generated when the sentence was highly connected to the text. However, skilled readers generated more elaborations when the text was more challenging, indicating that skilled readers had a better sense of when elaborations were necessary. Nonetheless, more complex self-explanations were only generated when the text was easy and when the reader possessed sufficient knowledge.

# 8:55 Automating reading strategy training and assessment

Joseph P. Magliano, Northern Illinois University, jmagliano@niu.edu Sara Gillliam, Northern Illinois University, gilliam.sara@gmail.com Keith K. Millis, Northern Illinois University, kmillis@niu.edu Danielle McNamara, The University of Memphis, d.mcnamara@mail.psyc.memphis.edu Christopher Kurby, The University of Memphis, ckurby@mail.psyc.memphis.edu Chutima Boonthum, Hamptom University, chutima.boonthum@hamptom.edu Irwin Levinstein, Old Dominion University, Ibl@cs.odu.edu

This study assessed extent to which the R-SAT, a computer based assessment tool for reading strategies, can be used to detect changes as a function of computer-based reading training provided by iSTART. Students either received or did not receive iSTART. R-SAT was used to assess the use of strategies prior to and after training. R-SAT was able to detect changes as a function of training, which indicates that reading training and assessment can be automated on a computer.

# 7:55 Using Holographic Backpropagation to Improve Sequential dependency Learning from Natural Language

Michael N. Jones, Indiana University at Bloomington, jonesmn@indiana.edu

Recent holographic encoding models (e.g., Jones & Mewhort, 2007) have seen reasonable success at learning, representing, and retrieving word transition information learned from text corpora. A major problem with this type of model, however, is that the more frequent lower-order n-gram encodings tend to overweight higher-order n-grams in the lexicon, making it difficult to retrieve long-distance dependency information and infrequent uses of a word. I present an adaptation of backpropagation for holographic models; error feedback from the lexicon is used to optimally organize the representation space. This technique can greatly increase the retrieval accuracy of higher-order chunks without sacrificing the storage of lower-order bigrams and trigrams.

# 8:15 Predicting Argument and Blended Text Recall with the Landscape Model

Aaron A. Larson, Northern Illinois University|, alarson7@niu.edu M. Anne Britt, Northern Illinois University, britt@niu.edu Paul van den Broek, University of Minnesota, pvdbroek@tc.umn.edu Panayiota A. Kendeou, University of Minnesota, kend0040@umn.edu

A key element to argument comprehension is recognition and representation of argument elements. Prior research has shown that most students do not detect these elements when reading a text with argument and narrative elements. This research is designed to detect reader memory for both argument texts and blended argument and narrative texts. We used the Landscape Model to predict recall of readers of differing argument and reading abilities. Results indicate that Landscape may vary in predictive ability depending on the skill of the reader.

### 8:35 Using Computerized Language Measures to Model the Referential Process

Bernard Maskit, Stony Brook University, Bernie@math.sunysb.edu Wilma Bucci, Adelphi University, Bucci@panther.adelphi.edu

We describe a new computational system that models phases of the *referential process*, by which nonverbal experience is connected to language. Using weighted and/or unweighted dictionaries, the system produces a visually smooth function representing the changing local density of dictionary matches, as well as new measures including the relative simultaneous usage of words from each pair of dictionaries. We present applications of these procedures to therapy sessions rated as more or less effective, and process notes written by therapists in successful and unsuccessful treatments. Applications for training and supervision of clinical psychologists; and basic applications for modeling different modes of memory retrieval are discussed.

# 8:55 Finding Latent Structure in Measures of Associative and Semantic Knowledge

William S. Maki, Texas Tech University, bill.maki@ttu.edu Erin Buchanan, Texas Tech University, erin.buchanan@ttu.edu

The number of behavioral and computational measures of associative and semantic relationships has increased dramatically in recent years. But what do these measures measure? We compiled a database containing 376 word pairs, each with values on 15 variables: five associative variables (including forward and backwards strength and distance in a word association space), two semantic variables (dictionary distance and feature overlap), and eight corpus variables (obtained from latent semantic analysis and more recent computational measures). Various latent structure analyses (e. g., multidimensional scaling) agree on two main factors distinguishing corpus from non-corpus measures and associative from semantic knowledge.

chair: Jonathan Vaughn

# 9:15 Intra-Observer Variability in Inter-Observer Accuracy Using Train-To-Code: An Adaptive Expert System for Training Systematic Observation and Coding Skills

Roger D. Ray, Rollins College, rdray@Rollins.edu Jessica M. Ray, University of Central Florida, jmray@cfl.rr.com

Problems in training behavioral observers to high degrees of inter-individual accuracy and intra-individual stability are fundamental in descriptive research and behavioral intervention services. This paper presents design characteristics and results of a formative evaluation of an artificially intelligent adaptive computerized expert system, called Train-to-Code, that shapes an individual's observation and recording behaviors and maximizes both coding accuracy and stability. Using instructor-generated videos and corresponding expert coding files for prompting and feedback, Train-to-Code adaptively presents four alternative training levels until expert-equivalent levels of inter-observer accuracy and satisfactory intra-individual stability in coding occurs without prompts or feedback.

# 9:35 A Hybrid Approach to Experimental Control

Peter Dixon, University of Alberta, peter.Dixon@ualberta.ca

In the present paper, I describe a new, hybrid approach to experimental control that combines the best features of scripting languages and general-purposed programming languages. First, experimental control objects are developed in a general-purpose object-oriented programming environment. Then, an XML file is used to select and arrange those control objects in order to carry out an experiment. A wide range of experiments can be implemented by specifying the arrangement of the control objects in the XML file, while, at the same time, the set of control objects can be easily extended for more demanding applications. An overview of a system using this approach is provided along with some examples.

# 9:55 Representing postures and generating trajectories in 3 dimensions: A Matlab program.

Jonathan Vaughan, Hamilton College, vaughan@hamilton.edu David A. Rosenbaum, Pennsylvania State University, dar12@psu.edu Drew Linsley, Hamilton College, dlinsley@hamilton.edu

Any posture can be represented as a series of rotations at each of the joints along the kinematic chain (e.g. shoulder, elbow, wrist). Movement trajectories can be computed by interpolation, in the coordinates of joint rotation, from one posture to another. A model of movement planning, the posture-based model (Rosenbaum, Meulenbroek, Vaughan, & Jansen, 2001), incorporating the generation of indirect movements around obstacles (Vaughan, Rosenbaum & Meulenbroek, 2006) is implemented as a Matlab program that facilitates the exploration of this model. The program provides a graphic user interface through which the user can explore the trajectories generated by the model.

### 10:15 ACTUATE Assessing Cases: The University of Alberta Testing Environment

Chris Westbury, University of Alberta, chrisw@ualberta.ca

This paper introduces software environment called ACTUATE (Assessing Cases: the University of Alberta Testing Environment) released, with source code, under a Creative Commons license. ACTUATE is a simple but flexible cross-platform computer program for delivering stimuli and recording responses for several kinds of experiments, tests, or assessments. It is specifically intended to facilitate 'real world' assessment spread across several sessions. ACTUATE can present sound, text, movie, multiple choice question, and Likert scale stimuli, and time responses to these stimuli with millisecond accuracy, and can also digitally record verbal responses.

# 9:15 Evaluating RMT in the Classroom

Elizabeth Arnott, Chicago State University, earnott@csu.edu Peter Hastings, DePaul University, peterwh@cs.depaul.edu David Allbritton, DePaul University, dallbrit@depaul.edu

Research Methods Tutor (RMT) is a dialog-based intelligent tutoring system for use in conjunction with undergraduate psychology research methods courses. RMT includes five topics that correspond to the curriculum of introductory research methods courses: ethics, variables, reliability, validity, and experimental design. In 2006, we evaluated the effectiveness of the RMT system in the classroom using a non-equivalent control group design. Students in three classes (n = 77) used RMT, and students in two classes (n = 52) did not use RMT. Results indicated that the use of RMT yielded learning gains of .71 SD above classroom instruction alone. In addition, results supported a possible advantage of using a pedagogical agent with RMT. Future directions for RMT include the addition of new topics and tutoring elements.

# 9:35 Change Blindness in Motion

Seth M. Davis, Linfield College Kay Livesay, Linfield College, klivesa@linfield.edu

Change blindness is the failure to recognize the change of an object to a new state. The present study examines the suggestion that change blindness cannot occur during motion. Participants watched a video in which a salient object in motion changes color from blue to white. After presentation participants were asked to describe the event. Thirty-eight percent of participants did not report the color change. These results are discussed within a memory-based paradigm of change blindness.

# 9:55 How to Support Learning from Multiple Hypertexts: A Study Combining DEWEX, Chemnitz LogAnalyzer, and SummTool

Anja B. Naumann, Technische Universität Berlin, Germany, naumann@telekom.de Ina Wechsung, Technische Universität Berlin, Germany, wechsung@telekom.de Josef F. Krems, Chemnitz University of Technology, Germany, krems@phil.tu-chemnitz.de

During the last decade web-based experimenting has become a well-established method in psychological research. Concurrently, learning with hypertexts has become an important research topic. The present paper describes the use and interplay of three tools (DEWEX, Chemnitz LogAnalyzer, and SummTool) which allow effortless web-based experimenting especially for hypertext studies. The convenience of the combined use of these tools is demonstrated by a study on learning with multiple hypertexts. The results of the study show factors that support learning from multiple hypertexts and the implications for the design of educational hypertexts.

# 10:15 Tired of Marking? Using peerScholar to Explore the Change in Peer Grading Reliability as a Function of Increased Number of Peer Evaluations

Dwayne E. Paré, University of Toronto Scarborough, dpare@psychexperiments.com Steve Joordens, University of Toronto Scarborough

Peer evaluation is believed to enhance student learning and critical thinking skills; however when peer-given marks are used to contribute to a student's final grade concerns about fairness and grade reliability can occur. Increasing the number of peer markers is one way to address these concerns, but with the increase in student workload the potential for marker fatigue also has to be considered. Our talk will highlight how we were able to determine a balance between the optimal number of markers and workload using peerScholar, an online peer evaluation system, to empirically explore the change in reliability of an averaged peer-given grade based on the how many students marked an assignment.

# "Psychophysical Techniques Examining the Social Psychology of Race and Racial Identifications"

**Organizer: Otto MacLin** 

This symposium presents a computerized system to collect psychophysical data examining racial boundaries. The program, PsychoPro, was designed to collect threshold data using morphed stimuli. PsychoPro can administer the following psychophysical methods, constant stimuli, adjustment, limits, and a staircase procedure. Additionally the program allows for adaptation phases. Additionally papers will be presented discussing methodological issues surrounding the use of morphed stimuli to examine racial boundary thresholds and issues regarding the use of psychophysical data to answer traditional social psychology research questions.

# 9:15 PsychoPro: A Visual Basic program to collect psychophysical ratings using morphed stimuli.

Dwight Peterson, University of Northern Iowa, djp927@uni.edu Ben Stone, University of Northern Iowa, benpstone@gmail.com Pryianka Joshi, University of Northern Iowa, priyankajoshi2006@gmail.com M. Kimberly MacLin, University of Northern Iowa, kim.maclin@uni.edu Otto MacLin, University of Northern Iowa, otto.maclin@uni.edu

Recent research examining the role of race has used a technique of racial categorization. In common, these studies use stimuli morphed to represent a continuum of images. This technique has limitations in regards to fully exploring how race is perceived in part due the arbitrary use of the mathematical properties of the continuum rather the perceptual properties. For example researchers will use the 30%, 50%, and 70% morphs as reference points in their studies as they correspond to the perceptual properties. We present here a program that allows greater exploration of the perception of race using psychophysical methods such as adjustment, constant stimuli, stair case, and adaptation. PsychoPro can also be used in a lab demonstration.

# 9:35 Special image morphing techniques used to examine the effects of racial markers in racial categorization.

Osman Chowdhry, University of Northern Iowa, chowdhry@uni.edu Dwight Peterson, University of Northern Iowa, djp927@uni.edu M. Kimberly MacLin, University of Northern Iowa, kim.maclin@uni.edu Otto MacLin, University of Northern Iowa, otto.maclin@uni.edu

MacLin and Malpass (2001) generated facial images, using a police sketch artist type composite program, that would be perceived as either African-America (other-race) or Hispanic (same-race) by simply changing a feature (hair) that acted as a racial marker. The authors were able to demonstrate the cross-race effect using these stimuli, however, the composites have limitations regarding their usefulness in research examining racial categorization. Racial categorization research typically involves the use of morphed images. Therefore, we have developed a technique to manipulate the starting images to allow researchers the ability to extend the research using racial markers for racial categorization.

# 9:55 A computerized system to examine the perception of race and skin tone using racial markers.

Priyanka Joshi, University of Northern Iowa, priyankajoshi2006@gmail.com Dwight Peterson, University of Northern Iowa, djp927@uni.edu M. Kimberly MacLin, University of Northern Iowa, kim.maclin@uni.edu Otto MacLin, University of Northern Iowa, otto.maclin@uni.edu

MacLin and Malpass (2001) developed a set of ambiguous race face stimuli that could be perceived as either same-race or other-race faces by changing the racial marker (hair); in addition the skin tone of the face was perceived as darker if an African-American racial marker was used. In the study presented here we use a psychophysical technique called matching to examine precisely how the perception of skin tone is altered by a racial marker with Caucasian observers. Results indicate that not only do other-race faces appear darker, but same-race (Caucasian faces) appear lighter than they actually are.

# 10:15 Using PsychoPro to examine social psychological phenomenon.

M. Kimberly MacLin, University of Northern Iowa, kim.maclin@uni.edu Otto MacLin, University of Northern Iowa, otto.maclin@uni.edu

Topics traditionally studied by social psychologists can be examined through psychophysics using computerized systems such as PsychoPro. Given that psychophysics is the study of how humans detect events in their environment, it is not too much of a stretch to consider how psychophysical methods could be used to study how humans detect social events in the environment. Instead of lights, tones, and colors, social psychophysical stimuli (like faces, situations, language and concepts) can be studied using psychophysics. Faces are one of the most important ways that we gather social information about other people. Factors such appearance, attractiveness, race, gender, age, and personality characteristics can all be derived (though not always accurately) from faces. Using psychophysics methodology to answer 'social' questions provides another dimension of experimental manipulation and control to the diverse array of methodologies already used by social psychologists.

# Precision Psychological Research in a World of Commodity Computers

**Organizer: John Krantz** 

**Organizer: John Krantz** 

### 10:45 New hardware, new problems?

Richard R. Plant, University of York, UK, r.plant@psych.york.ac.uk

With the proliferation of commercial experiment generators and custom software within cognitive psychology and the behavioral sciences many have assumed that issues regarding millisecond timing accuracy have been largely solved. However, through empirical investigation of a variety of paradigms, we have discovered numerous sources of timing error. These can range from poor scripting practices, incorrect timing specifications through to hardware variability. Building upon earlier research we have developed a commercial device and associated software that enables researchers to benchmark most computer-based paradigms in-situ and without modification. This gives them the opportunity to correct timing errors where practicable, to increase replicability and reduce variability. This can be accomplished by altering onset times for stimuli, replacing inaccurate hardware or by post hoc statistical manipulation should the source of error be constant. We outline the features of the device and accompanying software suite, stress the importance of such independent validation and highlight typical areas that can be subject to error.

### 11:05 Reaction times in Internet-based research: Hardware and software issues

Ulf-Dietrich Reips, University of Zurich, Department of Psychology, reips@psychologie.unizh.ch

This presentation on the measurement of reaction times via the Internet shows 1. why Internet-based research solves some hardware and software issues in measurement of reaction times tied to research that depends on the use of individual workstations or small clusters of similar workstations; 2. what problems may haunt the measurement of reaction times via the Internet; 3. how reaction times can be measured via the Internet. A new type of measurement is presented and empirically validated.

# 11:25 Following the Eye in Computerized Training: A Comparison of Two Input Devices.

Diane S. Rohlman, Oregon Health and Sciences University, rohlmand@ohsu.edu

James M. Michino, Lewis & Clark College

Erik Nilsen, Lewis & Clark College

Nicholas Gorman, Oregon Health and Sciences University

W. Kent Anger, Oregon Health and Sciences University

Workers with limited education and exposure to computers restrict the use of computerized training programs in occupational safety training. A simplified input device may reduce complexity. Eye track technology was used to evaluate a standard keyboard input device and a simplified 9-button input device for a computerized training program. Two groups of participants, native English-speakers and native Spanish-speakers, completed a computerized training program while their eye-gaze was tracked. In both groups, time spent looking away from the training content was reduced when a simplified 9-button response unit was used. The study participants also preferred the 9-button input device.

# 11:45 Formating your Experiment: Implications of Screen Layout

John H. Krantz, Hanover College, krantzj@hanover.edu

Monitor formats are changing. Traditionally computer monitors have had a 4 by 3 format where the width is 1.33 times greater than the height. With the advent of HDTV, computer monitors are following along and beginning to adopt the same 16 by 9 format. The question is does this change have any relevance for psychological research. The answer is yes, particularly if well used. This talk will cover issues regarding the changed format and why it needs to be paid attention to. This change brings both opportunities and challenges.

chair: Ulf-Dietrich Reips

# 10:45 e-Learning: Myth versus reality. What do Students and Staff Currently Make Use of and What are Their Aspirations?

Richard R. Plant, University of York, UK, r.plant@psych.york.ac.uk Tom Simpson, University of York, UK Annie Trapp, University of York, UK

In the UK as elsewhere there is an increased uptake of e-learning. Often the perception is that e-learning is ubiquitous amongst students of psychology. We have carried out the first large scale survey into experiences of, and attitudes toward, the use of technology in teaching and learning. This has addressed current use; the technologies used together with future aspirations and has questioned students (1327), non-university students (245) and staff themselves.

# 11:05 Automatic detection of sourcing and plagiarism problems across disciplines

Jennifer Storey, Northern Illinois University, jfidis@niu.edu Peter Hastings, DePaul University, peterwh@depaul.edu M. Anne Britt, Northern Illinois University, britt@niu.edu

Improving students' writing by providing quality feedback tailored to their specific needs is important. Previous research has indicated the effectiveness of Sourcer's Apprentice Intelligent Feedback mechanism (SAIF) in automatically detecting and improving students' multiple-document reading skills in the domain of history (Britt, Wiemer-Hastings, Larson, & Perfetti, 2004). SAIF was modified for cross-disciplinary instruction, specifically for the science domain. Results indicate SAIF is effective at identifying problems with student essays in both history and science. We also found that a specific LSA word space was required for automatic detection rather than a general LSA space.

# 11:25 Intelligent Computer Tutoring in Scientific Reasoning and Critical Thinking Skills

Kris Kopp, Northern Illinois University, kkopper@yahoo.com Jennifer Storey, Northern Illinois University, jfidis@yahoo.com Katja Wiemer-Hastings, Northern Illinois University, Katja@niu.edu and the Discourse Technology Group at Northern Illinois University

Critical thinking skills are a crucial component of scientific reasoning. We are presenting a new computer tutor (CT tutor) designed to improve critical thinking skills by having students identify flaws in specifically designed problems. The critical thinking skills covered by this tutor include scientific reasoning, argument, and persuasive communication. The tutor was developed using the AutoTutor architecture, which has already been successfully applied to other domains. A controlled experiment with college students tested the scientific reasoning component of this tutor, which produced significant learning gains. Plans for future work are outlined.

# 11:45 Evaluating the Influence of Visual Analogue Scales on Response Behavior

Frederik Funke, mail@ffunke.de Ulf-Dietrich Reips, University of Zurich, Switzerland, u.reips@psychologie.uzh.ch

In the present paper we report empirical data from experiments that examine the impact of visual analogue scales (VAS) and categorical scales on response behavior in self-administered Web questionnaires. In a split ballot design respondents were randomized to either a questionnaire with VAS or to 7-point radio button scales. We examine the following response behaviors and effects as indicators of previously discussed cognitive processes (Sudman, Bradburn, & Schwarz, 1996) that may precede a response: dropout, question order effects (assimilation and contrast effects), item nonresponse, satisficing behavior and response latency. Impact of format on data quality is discussed.

# 10:45 Real-time Generation of Representations for Cognitive Models

Randy J. Brou, Mississippi State University, rbrou@inst.msstate.edu Stephanie M. Doane, Mississippi State University, sdoane@doane.inst.msstate.edu Gary L. Bradshaw, Mississippi State University, glb2@psychology.msstate.edu

Computerized models of human cognition and behavior have been used to help researchers refine theories of cognitive processes. Two difficulties inherent in using these "cognitive models" are that building representations of to-be-modeled groups or individuals is time-consuming and prone to error when performed manually. The use of computerized tools to build representations for cognitive models could alleviate these problems. Such a set of tools has been developed and applied to the task of modeling individual aviation pilots performing flight maneuvers in real-time. A study conducted with 27 pilots confirms the accuracy of the computer representations.

# 11:05 Preparing for the Unprepared: Instance Based Learning for Complex Transfer

Angela Brunstein, Carnegie Mellon University, angelab@cmu.edu Cleotilde Gonzalez, Carnegie Mellon University, coty@cmu.edu

Instance-based learning theory can provide guidelines for preparing students for novel situations. Critical aspects for successful training are the kind of provided situations and feedback. A study on the car racing system investigated both and found best performance for immediate levels of complexity for represented situations, decisions and feedback. The predicting power of the theory and the corresponding ACT-R model could be improved by importing theories on spatial cognition for encoding and processing provided screens. This replaces modeler's intuitions by a cognitive theory on successful performance and could bring us closer to an integrated theory of human cognition.

### 11:25 Analysis and Modeling of Response Time using the Shifted Lognormal Distribution

Andrew Heathcote, The University of Newcastle, Australia, andrew.heathcote@newcastle.edu.au Emily Bohlscheid, The University of Newcastle, Australia

Response time distribution has a number of salient characteristics, including a positive shift below which no responses occur, and a positively skewed random portion varying in location and scale. We examine the shifted Lognormal as a distribution model that not only captures all of these characteristics, but also has a general motivation in terms of psychologically plausible cascade models of information processing. The link with Box and Cox's (1964) transformation method is explored, providing fast and robust estimation and useful model diagnostics, and the Lognormal is compared to other three parameter models of RT distribution in fits to empirical data.

# 11:45 Analyzing Recognition Performance with Sparse Data

Ching-Fan Sheu, National Cheng Kung University, Taiwan, csheu@mail.ncku.edu.tw Yuh-shiow Lee, National Cheng Kung University, Taiwan, psyysl@ccu.edu.tw Pei-Ying Shih, National Cheng Kung University, Taiwan, g93315030@ccu.edu.tw

Experiments to measure recognition performance sometimes involves only a small number of observations per participant, which makes d' analysis unreliable (Schooler & Shiffrin, 2005). We propose a mixed-effects signal detection model in which a random variable is introduced to account for heterogeneous hits and false alarms among individuals. This approach allows estimation of population effects, such as d', to borrow from the whole by pooling information from a sample of subjects in a condition. The method is validated by simulation and is used to analyze the effect of neutral and emotional words on recognition performance in a study (Lee & Shih, 2007) employing the emotional Stroop task (Gotlieb & McCaan, 1984).

Symposium: 1:10 – 2:30 Regency Ballroom D

"E-Prime® 2.0 Professional – Improving the power, precision, and ease of use of a proven research standard"

Organizer: ePrime

### Organizers: Walter Schneider, Anthony Zuccolotto, & Amy Eschman

E-Prime, software for the creation of computerized experiments, has become a standard tool in behavioral research labs worldwide with a user base of ten thousand users in over fifty countries. Addressing 5 years of feedback from researchers Psychology Software Tools, Inc. has announced a major upgrade and expansion of its flagship E-Prime product line: E-Prime 2.0 and E-Prime 2.0 Professional. The E-Prime product line provides a range of software enhancements supplying extraordinary power, precision, and ease of use for computerized behavioral research. A series of talks will discuss recent innovations and how they can be applied in practice to improve the effectiveness of your research. Advice on methods of introducing new students to E-Prime 2.0 will be provided as well as advanced topics related to specialized use of E-Prime in eye tracking, EEG, and fMRI studies.

# 1:10 E-Prime 2.0 Professional – Overview of enhancements for experiment generation, verification, and data collection.

Anthony Zuccolotto, Psychology Software Tools, Inc., anthonyzuccolotto@pstnet.com Brandon Cernicky, Psychology Software Tools, Inc., Brandon.cernicky@pstnet.com Amy Eschman, Psychology Software Tools, Inc., amy.eschman@pstnet.com

E-Prime 2.0 Professional technical details, new features, testing, and debugging methods will be discussed and demonstrated. Topics will include new user interface features, use of digital movies as stimuli, copy and paste operations between experiments, multi-monitor support, digital voice recording, Unicode support, use of schemes to set experiment defaults, automated testing methods, and considerations for upgrading E-Prime 1.x experiments.

# 1:25 A comprehensive teaching method for students that are learning to use E-Prime 2.0

Walter Schneider, University of Pittsburgh, wws@pitt.edu

The teaching of E-Prime 2.0 uses a combination of webcasts, tutorials, and exercises to speed learning and increase mastery of the materials in a short time. A novel method of instruction is used in which students first learn to storyboard their experiments and create variable/stimulus lists, and to then learn to implement experiments using E-Studio. A novice student can, on their own, view the Webcasts and perform the exercises to be able to create a wide range of experiments in a short time. Also addressed is the use of script to implement sophisticated experiments.

# 1:40 Precision timing through better defaults and simplified time auditing

Walter Schneider, University of Pittsburgh, wws@pitt.edu Brandon Cernicky, Psychology Software Tools, Inc., Brandon.cernicky@pstnet.com Anthony Zuccolotto, Psychology Software Tools, Inc., anthonyzuccolotto@pstnet.com

Accurate and precise timing is a key and challenging factor of using desktop computers in research. The causes for common timing problems (off frequency refresh monitors, operating system delays, display preparation, codec interaction, user confusion, etc.) are described and the methods to minimize them are discussed. New defaults within E-Prime are described, as well as auditing features that provide robust and correct timing in most application settings. Easy to interpret information when timing assumptions are not within specified timing requirements will be discussed.

# 1:55 E-Prime 2.0 Professional extensions for 3<sup>rd</sup> party hardware and software via Package Files.

Tim Smith, Psychology Software Tools, Inc., tim.smith@pstnet.com
Brandon Cernicky, Psychology Software Tools, Inc., Brandon.cernicky@pstnet.com
Anthony Zuccolotto, Psychology Software Tools, Inc., anthonyzuccolotto@pstnet.com

E-Prime 2.0 Professional includes support for system extensions through the use of E-Prime Package Files. Specialized package files allow easy interlinking of E-Prime with external devices to enable synchronization, calibration, condition selection/coding, and extended data analysis in support of eye movement, EEG, and fMRI experiments. Methods and utilities for the creation of user defined package files for the distribution and maintenance of common routines will also be discussed and demonstrated.

# 2:10 Recommended methods for using your Mac to develop E-Prime experiments

Mike Worden, Psychology Software Tools, Inc., mike.worden@pstnet.com

The E-Prime suite of applications does not currently run natively on the Macintosh. However, many researchers that are Mac proponents would prefer to design, develop, and test their experiments on their Macs even if they need to collect real-time data using a Windows machine. With the introduction of current generation emulation tools in the Mac environment, E-Prime experiment development and testing can be performed effectively on a Mac. Recommended methods for the configuration and use of these tools and their limitations with respect to E-Prime will be discussed.

# "Co-occurrence and Lexical Organization"

Organizer: Chris Westbury, Department of Psychology

University of Alberta, chrisw@ualberta.ca

# 1:10 The Effect of Different Linguistic Experience on Word Space Models: Preliminary Results

Marco Baroni, University of Trento, Italy, marco.baroni@unitn.it Alessandro Lenci, University of Pisa, Italy, alessandro.lenci@ilc.cnr.it Luca Onnis, Cornell University,

In our talk, we explore how, when controlling for other factors, the type of linguistic input fed to word space models such as Latent Semantic Analysis and Random Indexing affects the performance of the models. Particular attention is paid to 'psychologically plausible' inputs, such as child-directed-speech and oral data, presented to the models in relatively small amounts, and to issues related to incrementality.

# 1:25 Reducing the Effects of Frequency in Co-occurrence Models of Meaning

Kevin Durda, University of Windsor, durda1@uwindsor.ca Lori Buchanan, University of Windsor, buchanan@uwindsor.ca Richard Caron, University of Windsor, rcaron@uwindsor.ca

Lexical co-occurrence models of semantic memory form representations of the meaning of a word based on the number of times that pairs of words occur near one another in a large body of text. These models offer a distinct advantage over models that required hand-tallied norms collected from human subjects since the construction of the representations can be completely automated. Unfortunately, word frequency, a well-known predictor of reaction time in several cognitive tasks, has a strong effect on the co-occurrence counts in a corpus. Two words with high frequency are more likely to occur together purely by chance than are two words that occur very infrequently. In this paper we examine and compare several methods for reducing the influence of orthographic frequency on the semantic representations produced by co-occurrence models.

### 1:40 Preparing for Assimilation: The Next Generation

Symposium: 1:10 - 2:30

Curt Burgess, University of California, Riverside, curt@ucr.edu

Extracting meaning from language has been a notoriously difficult challenge for cognitive science. It is a truism that word meaning depends on context. However, it was only until high-dimensional memory models, that exploit lexical co-occurrence, that a clear operational definition was provided of meaning and context. The early models (LSA and HAL) are now in good company with a number of other high-dimensional memory models and the range and depth of cognitive and social representational and processing issues that are under investigation is staggering given their brief history. A glimpse into the future will be provided.

# 1:55 Compositional Semantics from Convolution-Based Encoding of Natural Language

Michael Jones, Indiana University, Bloomington, jonesmn@indiana.edu

Statistical co-occurrence models of lexical semantics represent a major advance over traditional models that rely on hand-coded representations. However, the many models on the market produce dramatic differences in the structure of the semantic spaces they create, even when trained on the same text input, and many models are based on theories of document retrieval with minimal link to mechanisms of human learning. I will outline some recent enhancements to the BEAGLE model of Jones and Mewhort (2007: Psyc Rev) that uses convolution mechanisms adapted from signal processing and memory theory to learn lexical representations. Extensions of the model into the Fourier domain and comparisons to other co-occurrence models on established tasks will be discussed.

# 2:30 Walking in space: Optimizing parameter settings in co-occurrence models of meaning

Cyrus Shaoul, University of Alberta, cyrus.shaoul@ualberta.ca Chris Westbury, University of Alberta, chrisw@ualberta.ca

High-dimensional models of semantic space use the global co-occurrence frequency of words in a large text corpus as the basis for their representation of semantic memory. One aspect of these models that is problematic is that they are highly parameterized, but they lack theoretical or empirical justification for many of the parameter settings. A family of related models can be defined by altering the parameters that define any single model. We have explored a family of models stemming from the HAL model, in order to find the set of parameters that maximizes the fit between semantic density measures and behavioral measures of lexical access.

Symposium: 1:10 – 2:30 Regency Ballroom F

"Apparatus innovations and the shifting landscape of psychological research"

Organizer: David Washburn

# Apparatus innovations and the shifting landscape of psychological research Organizer: David Washburn

Department of Psychology

# 1:10 Virtual Reality and Research: Old and New

Jim Blascovich, University of California, Santa Barbara

This talk will cover the author's past decade of thinking about and researching social influence within virtual environments. The advantages of immersive virtual environment technology as a research tool in social psychology will be discussed and the importance of understanding social influence within virtual environments as more and more people spend more and more time "existing" in virtual environments will be argued.

# 1:30 Math Lessons for Monkeys: Using Computers to Present Old Problems in New Ways

Michael J. Beran, Georgia State University

Methodologies utilizing computers allow for new ways to ask old questions about numerical abilities of animals. They also allow direct comparisons across species. For example, adult humans and rhesus monkeys each performed a sequential enumeration task with comparable results. New World and Old World monkeys also performed a computerized quantity conservation task.

# 1:50 New Questions, New Answers from Psychophysiology: Examples from Transcranial Doppler Sonography

Natasha Schultz, Georgia State University David A. Washburn, Georgia State University

The relation between physiological and behavioral measures has long been an interest in psychology. Technological innovations for monitoring arousal, skin conductance, eye movements, muscular responses, blood flow, and other indicators of physical state have lead in turn to new lines of inquiry and new kinds of data for behavioral researchers. This push-and-pull between apparatus and empirical attention will be illustrated with recent use-inspired basic research involving TCD.

# 2:10 Using fMRI to Constrain Psychological Theory

F. Gregory Ashby, University of California, Santa Barbara Jennifer Waldschmidt, University of California, Santa Barbara

Many computational models in psychology predict how neural activation in specific brain regions changes during certain cognitive tasks. The emergence of fMRI as a research tool provides an ideal vehicle to test these predictions. Yet significant methodological problems must be solved before such tests are possible. These include estimating the BOLD response in each region of interest, correcting these responses for effects produced by variables not included in the model, and transforming the neural activations predicted by the model into predicted BOLD responses. We describe methods of solving these problems, and present some illustrative examples.

# 1 Evaluating a computerized system for collecting show-up data in a field setting

Dwight Peterson, University of Northern Iowa, djp927@uni.edu Rick Trinkner, University of Northern Iowa, trinkner@uni.edu M. Kimberly MacLin, University of Northern Iowa, kim.maclin@uni.edu Otto MacLin, University of Northern Iowa, otto.maclin@uni.edu

We evaluate a handheld PDA based computerized lineup administration designed to collect data study show-ups. A program called PDA Eyewitness was designed to collect eyewitness identification data in the field. The current study presents the PDA based program and compares the data collected in the field to data collected with a single member show-up. Additionally, data collected in the field are compared to data collected in our lab using a desktop computer. Functional uses of technological resources such as the use of the PDA in lineup administration are discussed. Implications for future research are noted regarding the integration of computer based technologies in conducting a variety of psychological research in a field setting.

# 2 Are 50 hands better than one? A simulation of multi-play video poker.

Otto H. MacLin, University of Northern Iowa, otto.maclin@uni.edu Mark A. Dixon, University of Southern Illinois, mdixon@siu.edu

Legalized gambling continues to rise. Casinos are constantly developing new games to attract new customers and to maintain existing customers. It is therefore important to understand the basis of gambling behaviors. Thus researchers interested in gambling are in need of various tools that can capture gambling behaviors. A recent trend in casino gambling has been a movement from simple three reel slot machines to more complex video-based slots and video poker games. We present here a multi-play video poker simulation with data from our most recent study.

# 3 Java-based Experiment Timing

**Poster Session: 2:30 – 3:00 pm** 

Gary Bradshaw, Mississippi State University, glb2@psychology.msstate.edu Robert Crutcher, University of Dayton, rcrutcher@udayton.edu

Java is available within many browsers on different operating systems, allowing its object-oriented programming capabilities to be used by developers and deployed broadly over the internet, and developers are using it to create internet-based experiments that can reach a vast audience of potential subjects. Unlike dedicated software platforms (e.g., ePrime or Superlab), Java does not support hardware-based interrupts and timing, and thus suffers in timing accuracy compared to more professional programs. A series of experiments on Java timing accuracy, both with simple fixed delays and auditory events, reveals that Java timing can be degraded by concurrent operation of other software programs, but is not very sensitive to basic hardware characteristics of the client's machine.

# 4 An ethical simulation of artificial intelligence

John E. LaMuth, Victor Valley College, values@sisp.net

A new model of motivational behavior described as a ten-level, meta-perspectival hierarchy of the major groupings of virtues and values serves as the foundation for an ethical simulation of artificial intelligence. The systematic character of this ethical hierarchy allows for extreme efficiency in programming, each more advanced level building directly upon that which it supercedes, providing a precise determination during a given verbal interchange. This AI system (US patents # 6,587,846 and 7,236,963) is organized as a tandem, nested expert system, composed of a primary affective language analyzer: overseeing a master control unit that coordinates the motivational interchanges over real time.

# 5. MacArthur-Bates Communicative Development Inventory: The Chinese CDI

Meiling Hao, Beijing Language and Culture University, haomeiling@163.com Hua Shu, Beijing Normal University, shuh@bnu.edu.cn Ailing Xing, Beijing Normal University, xingailing@gmail.com Ping Li, University of Richmond, pli@richmond.edu

Early vocabulary development is a reliable predictor of children's later language skills. The MacArthur-Bates Communicative Development Inventory (CDI) has provided a useful tool to assess early vocabulary development in English and other languages (Fenson et al., 1994). However, there is no published CDI norm for Mandarin Chinese. Given the language-specific properties of Chinese and the differences between Chinese and other Indo-European languages in acquisition (Li et al., 2006) it is important to develop the Chinese version of the CDI. In this paper we report data collected from 456 Chinese families in Beijing (children's ages: 12 to 30 months) and the methods we used to construct the Chinese CDI.

# **6** Conducting Distributed Simulations Over the Internet

Thomas Z. Strybel, California State University Long Beach, tstrybel@csulb.edu Kim-Phuong L. Vu, California State University Long Beach, kvu8@csulb.edu Vernol Battiste, San Jose State Foundation and NASA Ames Research Center, vbattiste@mail.arc.nasa.gov

Walter Johnson, NASA Ames Research Center, wjohnson@mail.arc.nasa.gov

Collaborative work is increasingly performed over great distances due to the ease of communicating and sharing information over the Internet. Consequently there is a need for methods of measuring and analyzing the behavior and performance of distributed groups. We describe a method for conducting distributed simulations of air traffic operators (pilots and air traffic controllers) at remote locations interacting over the Internet. This method is currently being used to assess situation awareness of air traffic operators in current and Next Generation Air Transportation Systems. We provide recommendations for successful implementation and techniques for analyzing individual and distributed group performance.

### 7 Presidential Strategies on Priming Nationalism as a Salient Identity in Rhetoric

Chad Murphy, University of California, Riverside, chad@cognitivepolitics.net

Scholars have noted the increasing importance of presidential speech-making in recent years (Kernell 1997), and the changes that have been required with new developments in travel and wide access to the media. Specifically, presidents in modern times have used inclusive rhetoric in the high-profile State of the Union address (Teten 2003). Using both an analysis of word frequency and a high-dimensional model of meaning (Hyperspace Analogue to Language) model we show that presidents use inclusive rhetoric to activate nationalistic identities in their target audience as a way of generating support for their agenda.



# **Keynote Address**

Valerie Reyna Cornell University

# "Modeling the Mind in Fuzzy-Trace Theory, with Implications for the Human-Computer Interface"

In this talk, I discuss constraints imposed on an architecture of mind that takes seriously the idea that human information processing differs fundamentally from standard computational accounts. Specifically, modeling data gathered under the rubric of fuzzy-trace theory (e.g., Brainerd & Reyna, 2005; Reyna & Brainerd, 1995) provide evidence favoring a general dual-processes perspective. Dual-processes approaches acknowledge that reasoning encompasses alternative modes of processing: one that is analytical, quantitative, and operates on precise memory representations toward the verbatim end of a continuum and another that is intuitive, qualitative, and operates on gist representations toward the fuzzy end of the continuum (e.g., Reyna, Lloyd, & Brainerd, 2003). However, in fuzzy-trace theory this familiar dichotomy is up-ended, with fuzzy, gist-based intuition considered more advanced than precise verbatim analysis. Thus, the human preference for gist-based processing is contrasted with the (usually) literal processing of computers, and the former has advantages in such domains as expert judgment. I explore the implications of this fuzzy framework for modeling the mind, for the design of human-computer interfaces and, more broadly, for the use of technology to communicate risks and probabilities that support decision making.



# **Presidential Address**

Roman Taraban Texas Tech University

"Research as Instruction - Instruction as Research"

5:10-5:30 pm

Regency Ballroom D

# **Business Meeting**

# Minutes of the Steering Committee Meeting - November 15, 2006

Present: Kay Livesay, Roman Taraban, Jon Vaughn, Joe Young.

SCiP President Ulf-Dietrich Reips was delayed; thus, the meeting was convened at 8:15 p.m. by President-Elect Roman Taraban.

### Overview:

- 1. Welcome
- 2. Secretary Report
- 3. Report of Program Chair
- 4. BRM Report
- 5. Archive Report
- 6. Website Report
- 7. Federation of Behavioral, Psychological, and Cognitive Sciences Report
- 8. New Business

# 1. Welcome

President-Elect Roman Taraban thanked Kay Livesay and acknowledged John Williams for the organization of the conference.

# 2. Secretary Report

Kay Livesay reported that three vendors would be represented at the conference – WeXtor, Cedrus, and Psychology Software Tools. Kay suggested that assistance be provided to the secretary-treasurer in identifying and securing vendors for future conferences. Suggestions for the future included contacting Psychonomics vendors, and publishers like Erlbaum. Those present agreed that a volunteer member of the Steering Committee would be recruited to assist with vendors for the 2007 conference.

Kay indicated that SCiP by-laws require that 60 days pass after distributing election ballots for SCiP officers. The announcement of the new President and Steering Committee members would be made in December 2006.

# 3. Report of Program Chair

Kay Livesay assisted John Williams in assembling and formatting the 2006 program. Kay reported that the conference would feature 19 papers and 7 posters, and 2 symposia that included an additional 11 papers.

Because reviews for the Castellan Award were incomplete at the time of the meeting, the announcement of a winner was postponed. Members present expected that a decision could be announced by January 2007.

Prior to the meeting, Gary Bradshaw had volunteered to assist with chairing the 2007 conference. Roman Taraban indicated that he would assist Gary with organizing the conference.

### 4. Behavior, Research Methods Report

Kay indicated that the deadline for submissions to BRM was December 8.

# 5. Archive Report

Jon Vaughan distributed a written report on the Psychonomic Society Archive and discussed its expansion since inception in November 2004 and current status as a resource for experimenters and journal editors. A suggestion was made to put a link on scip.ws to the Archive.

# 6. Website Report

Roman Taraban acknowledged Xiangen Hu's significant contribution to maintaining and updating the website. This past year Xiangen purchased server space for scip.ws and renewed the domain name. Currently the domain name, scip.ws, is registered in Curt Burgess's name; those present agreed that the name should be listed under the auspices of the Society, if possible.

Those present also discussed how to increase activity at the website, including more use of discussion forums, more visibility of consultants, inclusion of logos for vendors, expanding the level of advertising, and the possible addition of regular podcasts from conference presenters and others.

# 7. Federation Report

Joe Young gave an update on the Federation (Federation of Behavioral, Psychological, and Cognitive Science), which includes SCiP. Federation dues were raised, but not in SCiP's category. A minimal increase of membership dues (about \$0.25 per member) can be expected in 2008. The Federation is a lobbying organization. Joe provided the group with some background on FABBS (Foundation for the Advancement of Behavioral and Brain Sciences), which was created to take over the educational role of the Federation, with goals of educating the public about behavioral, cognitive, and brain sciences and creating a forum for productive dialogue between researchers and others on public policy issues.

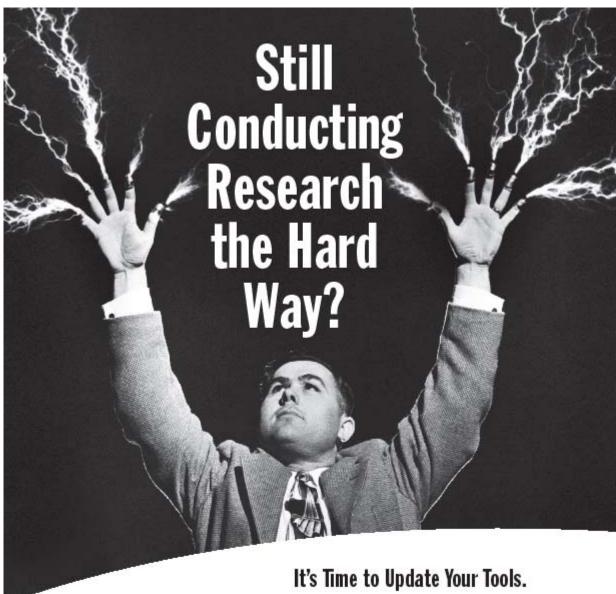
[See <a href="http://www.thefederationonline.org">http://www.thefederationonline.org</a> for more information on the Federation; see <a href="http://www.fabbs.org">http://www.fabbs.org</a> for more information on FABBS.]

# 8. New Business

The group discussed and supported the idea of have a theme, in addition to standard submission categories, for future conferences. A possibility considered for the 2007 conference was a focus on applied educational issues.

The group also supported the suggestion to allow e-mail voting for SCiP business.

Respectfully submitted SCiP Secretary-Treasurer





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