

Brain/Neurosciences & Education SIG Newsletter/Annual Meeting

American Educational Research Association

Chicago, Illinois

April 21-25, 2003

Sessions

22.065 Expert Panel Discussion

Does Evidence from the Neurosciences Support the Theory of Multiple Intelligences?

Session Chair: Read Diket, William Carey College

Introduction: Branton Shearer, Kent State University

Monday, April 21, 4:05-6:05 pm

Hyatt, Regency C, West Tower - Gold Level

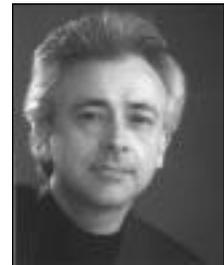


Patricia Carpenter

Dr. Carpenter is the Lee and Marge Gregg Professor of Psychology at Carnegie Mellon University and is a member of the Center for the Neural Basis of Cognition there. Dr. Carpenter is one of the pioneers in the study of language and reading comprehension and is actively engaged in applying the results of neuroscience research to findings from traditional behavioral studies of cognition. Dr. Carpenter's research interests include: mental imagery, problem solving, language comprehension, and visually-based problem solving.

Antonio Damasio

Dr. Damasio is the Van Allen Professor and Head of Neurology at the University of Iowa College of Medicine and adjunct professor at the Salk Institute. Dr. Damasio is the author of a number of important books investigating consciousness, emotion, and cognition: *Looking for Spinoza: Joy, Sorrow, and the Feeling Brain*; *The Feeling of What Happens: Body and Emotion in the Making of Consciousness*; and *Descartes' Error: Emotion, Reason, and the Human Brain*. Dr. Damasio's research interests include: language, emotion, and decision-making. (Photo by Christian Steiner).



Howard Gardner

Dr. Gardner is the John H. and Elisabeth A. Hobbs Professor in Cognition and Education at the Harvard Graduate School of Education. He is also an adjunct professor of psychology at Harvard University and an adjunct professor of neurology at the Boston University School of Medicine. Dr. Gardner is the author of a number of important books on education and intelligence: *Good Work: When Excellence and Ethics Meet*; and *Frames of Mind: The Theory of Multiple Intelligence*. Dr. Gardner's research interests include: the theory, basis, and measurement of intelligence and creativity.

Michael Posner

Dr. Posner is the Sackler Professor of Psychology in Psychiatry at Cornell University and director of the Sackler Institute. He also developed the Center for the Cognitive Neuroscience of Attention at the University of Oregon. Dr. Posner is one of the world's leading neuroscientists and one of the pioneers of using functional neuroimaging to understand human cognition. Dr. Posner's research interests include: attention, cognition, emotion, consciousness, the neuroscience of reading, education, genetics, and development.



Sessions

45.059 Submitted Paper Session

Educational Neuroscience - Methodology & Applications

Session Chair: Michael Atherton, University of Minnesota

Wednesday, April 23, 12:25-1:55pm

Hyatt, Columbus Hall E/F, East Tower - Gold Level

The Impact of Stress Hormones on Cognitive and Emotional Development: Implications for Impoverished, Maltreated and Minority Youth

Lynn M. McWhorter, Indiana University

Cognitive EEG Test-Retest Reliability

Judy L. Giesen, University of Alabama

Gopakumar Venugopalan, University of Alabama

Bovorn Sirikul, University of Alabama

The Neuroscientific Basis of Chess Playing: Implications for the Development of Talent and Education

William M. Bart, University of Minnesota

Michael Atherton, University of Minnesota

The Application of Gaze-Contingent Display Changes and Event-related Optical Signals (EROS) for Measuring Inhibitory Neural Signals

Shun-nan Yang, Brain Science Institute RIKEN

Yu-chi Tai, University of Illinois at Urbana-Champaign

George W. McConkie, University of Illinois at Urbana-Champaign

31.103 Paper Discussion

Brain/Neurosciences & Education Paper Discussion

Tuesday, April 22, 12:25-1:05pm

Sheraton, Chicago Ballroom 6, Ballroom Level

Gender Differences in the Relationship of Working Memory Tasks

James S. Cole, University of Missouri-Columbia

Karen Weston, University of Missouri-Columbia

Gypsy Denzine, Northern Arizona University

23.018 SIG Business Meeting

Monday, April 21, 6:15-7:45pm

Hyatt, Regency C, West Tower - Gold Level

SIG Officers

Read M. Diket, president

diketwcc@netdoor.com

Michael Atherton, program chair

athe0007@umn.edu

Terry Fogg, secretary/treasurer

terry.fog@mnsu.edu

SIG Website

<http://www.umn.edu/~athe0007/BNEsig/>

A Message from the President...

Thank you members for the opportunity to serve as your president. In my ten-year association with this sig, I have grown in my conviction that neuroscientific information does impact in positive ways educators' ability to teach effectively. We cannot wait until "someone else" digests the information for us; educators must go to potential resource people for information or invite them to our table.

My sense is that many neuroscientists have a service vision for their work. They want to share the exciting findings of their field with researchers in the service-oriented education field. Certainly we have experienced that with the presenters from neuroscience who have come at considerable personal or institutional expense to AERA in recent years.

Sig membership dues afford your leadership the means by which to operate effectively. Please consider continuing membership in the coming year, or joining us as a new member. I will be serving as sig president in the coming year and Michael Atherton, president elect, will be continuing for another year as program chair. We encourage you to submit proposals for next year's annual meeting.

Your leadership extends special thanks to Branton Shearer for development of an extensive multiple intelligence strand for the Chicago annual meeting. Michael Atherton, program chair for Neurosciences and Education, invited an excellent panel of neuroscientists to meet with Howard Gardner, theorist, in a discussion of related works; in addition, he designed other exciting sessions around papers submitted by AERA researchers.

AERA will be audio taping the panel discussion, Session 22.065, for those interested in purchasing personal or institutional copies of the landmark meeting of minds. We encourage members to avail themselves of this service.

Finally, I would like to thank Michael Atherton for his diligence in organizing this newsletter and to Barbara Tillery at William Carey College for her assistance with its typesetting and production.

Read M. Diket, Ph.D.
William Carey College
498 Tuscan Avenue
Hattiesburg, MS 39401
(601) 310-6205

SIG History

Special interest groups in AERA provide a forum for developing strands of research in education. Often, as a strand of research develops, the interest group adjusts its name to reflect those developments. It can be interesting to go back in time and follow the evolution of research through the presenters and titles of the sessions. As reported here, the history is limited to the memory and working documents of current leadership's membership in the group. In sessions each year, two basic themes are explored: *What is the current status of basic research in the neurosciences? How is teaching impacted by research in neurosciences?*

M. C. Wittrock is thought to be the organizing president in the 1980s. The current leaders' earliest records list Bruce R. Dunn, University of West Florida, as president of Psychophysiology and Education from 1988-1990. In 1990, Marlin Languis, Ohio State University, assumed the presidency and apparently served until Martha Wilson, Capital University, entered into the presidency by 1993. Denise Dunn, University of West Florida, entered the presidency in 1996 and continued in the office through 1997. In 1998, and 1999, Carol Fry Bohlin, California State University at Fresno, provided leadership at the conferences as president. George Hruby, University of Georgia, assumed leadership in 2000 and continued his role through the 2002 conference. In 2003, Read M. Diket, William Carey College, completes her first year as president and prepares for a second year of leadership.

1992: SIG Psychophysiology and Education (San Francisco)

- Putting Educational Relevance in Biological Context: Implications of Brain Research/ chair/discussant David Andres; participants Virginia W. Berninger, Bruce Dunn—themes respectively were neuropsychology and cognitive psychophysiology.
- Learning and the Brain/ David B. Andrews; Bruce Dunn, Paul Van Dyke, Mike McKay; Peter Gram: theme is differences in brain's electrical activity patterns as a function of learning words verses pictures (Stroop test).
- Marlin Languis chaired membership meeting.

1993: became SIG Brain and Education (Atlanta)

- Brain and Education: What Are We Learning? Chair/discussant Martha Wilson; participants Lorraine Coffin, Glenn Cartwright.
- Making Connections: Teaching and the Human Brain/ chair David Andrews; book discussant/author Renate N. Caine.
- Martha Wilson chaired membership meeting

1994: SIG Brain and Education (New Orleans)

- Applying Brain-Based Principles to Education: Demonstrations, Performances, and Consultation/ roundtables—Renate N. Caine on documentation of wholistic phenomena in learning using cross-discipline approach with neurosciences; Delores D. Liston on stories of the mind with brain-based education and narrations; Terrell N. Chandler with cognitive physiology and applied physiological principles in mental stimulation.
- Learning and the Brain: Neurobiological and Psychophysiological Research/ Martha Wilson, chair; Edynn Y. Sato spoke on selective attention and education with neurobiological perspective; Denise A. Dunn, Bruce R. Dunn, Patricia Peters, M. Kelly Thompson explored interest and event-related potential; Luara Gaudet, Dinah Jackson investigated neurological and psychosocial consequences of traumatic brain injury; Marlin L. Languis served as discussant.
- Handedness and Gender Implications in Learning/ chair, discussant Martha A. Wilson; Carol Fry Bohlin presented on solution strategies for mathematics problems and spatial visualization ability considered with handedness and gender; Joseph M. Piro determined patterns of handedness; Nancy Bailey investigated measurement of students' potential for professional development in veterinary medicine
- Martha Wilson chaired membership meeting.

1995: Brain and Education (San Francisco)

- Learning Strategies and Individual Differences: Classroom Implications/ Chair, discussant Edynn Sato; Umesh Thakkar discussed visualization processes in classrooms as relates to physiological and neural research; Marlin Languis reported brain mapping assessment of middle-school learning strategies in an intervention program with Scott Johnson, Suzane Crummy & Deborah Withers; JoEllen Harris Stearns assessed characteristics of creative high school students; Martha A. Wilson and Barry T. Alcock addressed the widening community of learning and partnerships for teacher and middle school education
- Learning and the Brain: Environmental and Psychosocial Considerations/ Martha Wilson served as chair, discussant. Participants Delores D. Liston spoke on brain-compatible classroom using theory in praxis; Renate Nummela Caine used research on plasticity to inform understanding of optimum enriched environments for human learning; Stephen K. Rice, Karen Rice, and Lane Lovell presented dimensions of differential experience with enriched environments, cortical plasticity, and pondered implications for instructional design; Denise A. Dunn, Bruce R. Dunn, Patricia Peters, M. Kelly Thompson with Suzanne Hidi reported event-related potentials in males and females with two levels of reading interestedness; Laura B. Gaudet, Steven Pulos, Dinah Jackson addressed self-reported concerns of traumatic brain injured individuals from the perspectives of survivors, family members, and healthcare providers

1996: Brain and Education (New York City)

- Brain Behavior Research: Studying Individual Differences (Symposium in honor of Marlin L. Languis) Chair, discussant David Andres. Participants Denise A. Dunn, Bruce R. Dunn, Frank Andrasik and Patricia. T. Garrett-Peters discussed event-related potential correlates of cognitive processing in ADHD males; Bruce R. Dunn, Michael T. McKay presented a test of bimodal theory using an EEG-based model of cognitive processing style; Martha A. Alcock, Michael Torello and Paul J. Nour explored interdisciplinary neurocognitive research at liberal arts colleges
- The Brain and Cognition: Implications for Education and Assessment/ Roundtables included Martha D. Davis, Doris Giles on using multimedia to uncover the secrets of the brain; Carolyn Orange investigated effects of nutrasweet and caffeine on memory; Laura Gaudet and Steven Pulos reported development of a self-report symptom inventory with psychosocial concerns of traumatic brain-injured individuals; Delores D. Liston presented changing our minds as a struggle to present a philosophical and spiritual analysis of neuroscience research

1997: Brain and Education (Chicago)

- Brain Research and Educational Practice/ Roundtables included Lynette R. Schaverien presented neo-Darwinian view of learning and value for science and science education; Deborah Zolot and Larry Hess investigated cognitive assessment of Asperger's Syndrome in an inner-city adolescent male; Paul Stemmer discussed improving student motor integration by use of an interactive metronome; Bobby Fry explored parallel paradigms with implication for neuropsychological research on pedagogical practices
- From Brain Research to Educational Practice/ Chair Martha Alcock. Presenters Denise Dunn, Bruce Dunn, Frank Andrasik and Patricia Garrett-Peters discussed attention-deficit hyperactivity disorder and sentence processing; Marlin Languis presented on understanding and coping with HDHD; Anne Hauson considered implications of recent neuroscience for curriculum decision-making; David Andrews asked what does brain research tell educators with metaphor and mandate; Martha Alcock and Michael Torello were discussants
- Membership meeting was chaired by Denise Dunn; session included discussion of ethical considerations in special education for issues and cases by Peter Horn; respondents were Martha Alcock and Michael Torello, Capital University

1998: Brain and Education (San Diego)

- Neuroscience and Education: What are the Implications of Brain Research for Educators? Chair Carol Fry Bohlin. Participants John Polich on electric thoughts and the brain; Larry R. Squire discussed memory systems of the brain; Joan Stiles on rethinking neural plasticity in cognitive development following early brain injury
- Business Meeting and Excursion to Electrophysiology Laboratory/ Chair Carol Fry Bohlin, Secretary Kim McNeley, treasurer Delores Liston, membership Martha Alcock, program co-chairs David Andrews and Carol Fry Bohlin. Presenter John Polich offered a pre-excursion overview of cognitive electrophysiology laboratory at The Scripps followed by a reservation only on-site tour and reception
- Roundtables: Brain and Education/ Martha Alcock discussed psychological type, brain behavior relationships, and middle-school case studies; Michael Caarbonaro presented implications of neural network modeling for educational research

1999: Brain and Education (Montreal)

- Brain Research and Its Implications for Education Theory and Practice/ Chair Carol Fry Bohlin. Participants: Paul Gold discussed nutritional and hormonal influences on learning and memory in rodents and humans; Elissa Kido, Robert Crafton, Daniel Kido, and K. Kuppusamy reported imaging cognitive complexity with a fMRI study on math and language functions; Michael Cowson, George Adelman, Asghar Iran-Nejad asked what can neuroscience and education learn from each other. Discussant was George G. Hruby.
- Business Meeting/ Chair Carol Fry Bohlin. Guest speakers were Martha Alcock, Elizabeth Murphy on researching connections between developing personality preferences and electrophysiological brain patterns
- Roundtables: Brain and Education/ Clyde Winters discussed potential impact of the neurobiological knowledge base on the education of learning disabled; Marie V. Simonsson presented on cognitive aspects of stress during hypothetical conflict resolution tasks; George G. Hruby pondered the ecologically situated, Darwinian brain; M. Suzanne Moodly discussed problem solving strategies used on the Mental Rotations Test; Paul H. Gathercoal, reported on endorphins and media messages which might be implicated in addicting students to mediated violence and emotion

2000: Brain and Education (New Orleans)

- Roundtables: Brain and Education/ Eunsook Hyun discussed ecological brain and young children's naturalist intelligence from the perspective of developmentally and culturally appropriate practice; Kim McNeley presented evidence of multiple-choice questions' engagement of higher-order processing through cortical activity correlates; Rick Banghart considered from evolutionary to educational psychology
- Insights for Education from the Neurosciences was chaired by Carol Fry Bohlin. George W. Hund discussed how reading ability/disability is related to brain variation; Roben Gur asked is exercising your brain like exercising your muscles, following with implications for education of similarities and differences [also discussed changes in brain physiology with age by gender]; Raquel Gur reported study of the processing of emotions in the brain and implications for teaching [and identifying latent structures for] emotional behavior
- Meeting of the Brains: Business Meeting. George H. Hruby, chair. Special presentation made on behalf of new government funding for interdisciplinary work including brain research.

2001: Brain and Education (Seattle)

- Multiple Intelligence and Student Achievement/ Participants William Calvin and Mindy Kornhaber studied multiple intelligence in the lab and in the field, initiating a dialogue between neuroscience and classroom achievement. Discussants Branton Shearer and George Hruby
- How and What We Know About How and What We Know: Three Neuroscience Perspectives on Language and Learning: Chair was George Hruby; Participants James Hamos explained how and what we know ... from a neuroanatomical perspective; Michael Posner considered educating the human brain from a cognitive neuroscience perspective; Alec Marantz considered language and learning from a computational neuroscience perspective. Overflow crowd attended session.
- Meeting of the Brains: Business Meeting: George Hruby chaired session. Participants were James Hamos, Michael Posner, Alec Marantz.
- Brain Imaging Technology and Education: Issues and Evidence: Chair was Read M. Diket. Participants: Robert Crafton, Elissa Kido, and Michael Hulsizer, investigated mapping sensory preferences with fMRI; Michael Atherton authored paper with William M. Bart presenting education and fMRI, its promise and cautions; Clyde A. Winters proffered brain-based teaching as fad or promising teaching method; Barbara Ohlund with Samuel DiGangi, and Angel Jannasch presented an investigation of the reliability and validity of theta/beta ratio measurement

2002: Brain and Education (New Orleans)

- Naturalizing neuroscience: Cognition and learning in humans and other natural organisms: Chair was George Hruby. Participants: Owen Flanagan explored neuroscience and naturalized epistemology; Marc Bekoff on animal emotions, naturalizing the study of passionate natures; Patricia Churchland, presenting on neuroscience and naturalized psychology
- Diverse perspectives: educational neuroscience and cognitive ethology/ Chair Read M. Diket. Participants Michael Atherton, William M. Bart on what the neurosciences can tell educators about reading and arithmetic (review of current research); Carolyn A. Ristau discussed what chimps who imitate and chat reveal about purpose; Donna Rosenberry and Ronald R. Morgan presented an investigation of the behavioral manifestations of elementary-aged children with agenesis of the corpus callosum.
- Business Meeting, chaired by George Hruby; elected Michael Atherton program chair; also elected secretary-treasurer; Diket takes over as president