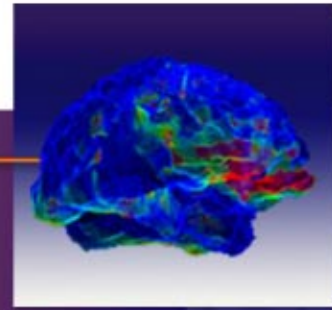




Massachusetts
Neuropsychological
Society



<http://www.massneuropsychology.org> • FALL 2007

President's Report

Joel Rosenbaum, Ph.D.

MNS is a diverse and rich resource and its membership constitutes the cutting edge of Neuropsychology regionally. We are now the largest state neuropsychological society in the country. I am delighted and honored to serve as your president.

As a society, I am pleased to announce that under the guidance of our Board of Directors (BOD) Treasurer, Dr. Gail Grodzinky, the state of the society is good. With an increasingly strengthened fiscal backbone, we can support the needs and endeavors of our membership while recognizing that, as the largest professional neuropsychological society in the country, we have an obligation to position ourselves as a hub that pays attention to issues that impact our Northeast region especially, taking a proactive stance as much as possible.

Massachusetts Neuropsychological Society Board of Directors 2007-2008

Officers

President: Joel Rosenbaum, Ph.D.
 President-Elect: Maxine Kregel, Ph.D.
 Past President: Dana L. Penney, Ph.D.
 Treasurer: Gail Grodzinsky, Ph.D.
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 Science Symposium/20th Anniversary Gala:
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 Maxine Kregel, Ph.D.
 Raquelle Mesholam-Gately, Ph.D.
 Dana L. Penney, Ph.D.
 Sandra Shaheen, Ph.D.
 Paul Spiers, Ph.D.
 Federation of Behavioral, Psychological & Cognitive Sciences
 Representative Linda Podbros, Ph.D.
 Student Representative: Daniel Seichepine, M.A.

Toward such ends, we continue to raise awareness of our society locally and nationally. In our efforts to work with APA and the National Academy of Neuropsychology (NAN), and to foster relationships with other scientific and professional organizations, we recently sent to you information regarding how to support national efforts to establish full parity for our field while making sure that training issues for our students are not passed over. Longtime positive relationships with NAN and the International Neuropsychological Society continue. New relationships are being established also with the American Academy of Clinical Neuropsychology, and the Federation of Behavioral, Psychological and Cognitive Sciences as well.

Dr. Linda Podbros has been established as our new representative to the Federation of Behavioral, Psychological and Cognitive Sciences. Dr. Podbros brings a wealth of experience in research and clinical venues to bring us to the next level in our relationship with "The Federation." Our partnering with the Federation is important for many reasons. First, our society is a clinical and research community founded with a mission statement that encourages and maintains close collaboration among researchers and clinicians so the endeavors of research and practice inform each other in a manner that supports the goals of each. Our work together with the Federation allows us to make needed national contacts, learn advocacy skills, and make sure that research monies remain available to Neuropsychology while we also work to promote clinical advocacy.

continued on page 2

In This Issue . . .

President's Report	1
Get Connected 2008 MNS Membership Drive	3
Professional Affairs Report	3
Continuing Education Report	4
MNS Summary of Board Accomplishments 2006-2007	5
MNS Membership Benefits	6
Update from the Membership Director	6
MNS Member Spotlight: Paul Spiers, Ph.D.	7
Federation of Behavioral, Psychological & Cognitive Science Report	7
Science Symposium 2007 Review & Poster Session Abstracts	8

We continue to work actively and collaboratively with neuropsychological assessment publishing firms. This past summer, we hosted a conference call meeting involving local neuropsychologists and key test development personnel of The Psychological Corporation to assist with the development of the upcoming WAIS-IV. The meeting was mutually beneficial in helping to ensure that they and we end up with the most useful instrument for clinical and research endeavors.

Your Continuing Education program continues to grow under the leadership of Drs. Sandra Shaheen and Maxine Krengel with the wisdom of our longtime educationally-savvy and sage BOD member, Dr. Carmen Armengol. We are planning some exciting events over the next year in Celebration of MNS's 20th Anniversary, including a Gala event later this year. Under the helm of Drs. Anthony Giuliano and Raquelle Mesholam-Gately, this year's Scientific Symposium on June 5th was a great success with Dr. Stephen Rao as our plenary speaker, of course with the usual accolades of our matriarch, Dr. Edith Kaplan, and with truly wonderful student poster sessions. We acknowledged Lindsay Miarmi as the winner of this year's Nelson Butters Award for best student poster. Also, I stressed the need for critical thought about that which we need to establish, create, and nurture for our legacy, the students of Neuropsychology. Toward this end and to encourage continued thought about this among the membership, a large part of this Newsletter volume incorporates the abstracts of all the fine research poster presentations presented at the Symposium. The Education Committee continues to seek input and participation from the membership, and Dr. Shaheen should be contacted at 617-232-4858 if you have questions, suggestions, or are interested in participating in any of the many educational projects underway or suggested by you.

Professional Affairs has been very active on your behalf. Dr. Kira Armstrong, our BOD Secretary, also serves as the new Director of the MNS Professional Affairs Committee (PAC). The committee is a spirited and motivated group: Drs. Kira Armstrong, Roger Cohen, Murdo Dowds, Richard Fischer, Margaret Lanca, Clare O'Callaghan, Dana Penney, Linda Podbros, Jeff Sheer, and me. If you have particular concerns that you feel need to be addressed, please contact Dr. Armstrong or any of us directly. One of the key emphases of this group has been to recognize the need to inform MNS members about relevant issues in the area. Largely we have done so via e-mail. Through the MNS Listserv, you recently received information about the Blue Cross Blue Shield TOP initiative to help you make an informed decision as to whether to participate in that program. This information was gleaned from an informative meeting we had at the Landmark Center with key Blue Cross/Blue Shield management in July 2007. As a result of that meeting, we have established direct ties with them, and they know that they can count on us to participate in decisions that pertain to future policy changes that may impact neuropsychologists in the area. They also, as a result,

have a better appreciation of the role that this society has played in their previous policies, as well as a better appreciation of the diverse ways that we impact the health of their subscribers. Again, I emphasize on behalf of Dr. Armstrong and the PAC the importance of sharing your e-mail addresses with MNS. We keep all your personal information confidential and do not share our membership lists with any other organizations. E-mail truly is the best way for the PAC and the BOD to communicate urgent information to you in timely fashion.

Membership continues to grow and MNS has established new procedures that ensure timely response to all applicants, at each level of membership, at any time of year. This year, we wished several BOD members well as they completed their service to the Society, including: Dr. Anthony Giuliano, past Secretary; Dr. Clare O'Callaghan, past President; Dr. David Wolff, past Member at Large and Newsletter Editor; and, Dr. Mimi Boer Castelo, our Student Representative. With great pleasure, we also welcome new members to the MNS BOD including: Drs. Linda Podbros and Paul Spiers, Members at Large; Dr. Kira Armstrong, Secretary; and, Daniel Seichepine, Student Representative.

While thrilled to update you on the many activities of your BOD since our last Newsletter, I also wish over the next year to invite discussion among us about how MNS might grow to serve Neuropsychology better in a landscape that has changed greatly since MNS was founded 20 years ago. For your consideration, as the largest such organization in the country, perhaps we have a responsibility not only to neuropsychologists in Massachusetts but to neuropsychologists in the region and that we need clear and direct channels of communication within the area and nationally? Perhaps we need to raise our profile locally and within a broader playing field? Perhaps, while maintaining momentum in our professional affairs work and our educational programs, we should ask members of our society to become more involved?

We also need to remember the challenges before us and other states' neuropsychologists. Research dollars are scarce while managed care challenges our reimbursement rates, and, in this climate, an increasing number of individuals require our services. I envision MNS taking on a larger position than it has thus far as a resource for the region. To accomplish this, I see communication channels beyond the Boston hub expanding with representation from Western and Southern Massachusetts. I hear us listening closely to our colleagues in New Hampshire, Rhode Island, Vermont and Maine, as well as paying attention to what precedents are being set in other areas of the country so that we can be proactive and prepared for what might literally be coming down the pike. I feel us reach out to national associations.

Let us know what you need, participate in program development, and help our special community grow. Your BOD continues to be very busy and motivated to work hard on your behalf in many areas. Please let us know what you think - what you like about the society, what you might not like, and

ways in which you envision growth in the society. Remember that through the MNS website (www.massneuropsychology.org), you have one-click access to BOD members.

Your BOD wants to serve you as best as we can. This year holds particular promise and opportunity as we look back and take stock of what MNS has done for us so far while we also recognize that times change and we can open our minds to a new vision of how MNS can serve its membership and community for the next 20 years

Happy 20th Massachusetts Neuropsychological Society!

~Get Connected 2008 MNS Membership Drive~

FREE CEUs

Invite a lapsed MNS member to re-connect with MNS and receive a coupon good for *Free CEUs for any 1 regular lecture in January, February, or March 2009*, when the lapsed member is reinstated as a Full Member and names you as their "MNS Connection."

THE RULES

- Both the current member and the lapsed member need to complete the brief entry form at the www.massneuropsychology.org membership page, so we know who recommends whom.
- To receive Free CEUs you have to be listed in the MNS database as a paid 2008 member.
- The lapsed member needs to be listed in the MNS database archive or able to verify prior membership, for example via dues payment record.
- Entries need to be completed by December 15, 2008.
- Coupons will be e-mailed to members before the January 2009 lecture.
- Only one entry per member please.

MEMBERSHIP RENEWAL DISCOUNT

Invite a friend to start a connection with MNS and receive a coupon good for \$20 off your 2009 membership renewal when your friend is accepted as a Full Member and names you as their "MNS Connection."

THE RULES

- The MNS Applicant needs to complete the regular membership application found at the www.massneuropsychology.org membership page and needs to name a current member as their connection.
- The current MNS member needs to complete the brief entry form found on the membership page and name the applicant as their connection.

- The member needs to be listed in the MNS database as a paid 2008 member to receive the discount coupon.
- Entries need to be completed before January 1, 2009.
- Only one entry per member please

THE FINE PRINT

- MNS will make considerable effort to help you verify your membership status. However, we're sorry that discounts cannot be given out in the absence of prior listing in the MNS database or other concrete verification.
- Winners are responsible for saving their coupons; misplaced coupons cannot be reissued.
- Membership drive applies to Full Members only.

Professional Affairs Report

Kira Armstrong, Ph.D., ABPP-CN

I am honored to have been asked to lead MNS's Professional Affairs Committee (PAC), and am delighted to be working with the rest of the talented and dedicated members of this committee: Roger Cohen, Ph.D., Murdo Dowds, Ph.D., Richard Fisher, Ph.D., Margaret Lanca, Ph.D., Clare O'Callaghan, Ph.D., NP, Dana Penney, Ph.D., Linda Podbros, Ph.D., Joel Rosenbaum, Ph.D., and Jeffrey Sheer, Ph.D. I recognize that most of us want the freedom to "just do our job, and do it well." Admittedly, focusing on issues unrelated to direct patient care can be time consuming and distracting, but they have never been more important than they are right now. With Neuropsychology now well established in its essential role in patient care, the MNS PAC is poised to further support these activities on both a national and regional level. In particular, the PAC is committed to supporting MNS members and is actively working on a number of issues relating to member education and advocacy.

Member Education: On a national level, the PAC is working diligently to keep you informed of important changes in billing codes, reimbursement issues and federal policies that will have an impact on your daily practice. We have shared important information relating to mental health parity, training issues, and other policies that affect the field of neuropsychology as a whole. Locally, we have kept members up to date on important insurance issues, such as Blue Cross Blue Shield's recent TOPS policy, and MBHP's call for psychologists to participate in outcome measures forums. We remain committed to sharing this kind of information for MNS members, and will continue to distribute important announcements as they come to our attention.

Advocacy: The members of the PAC are committed to supporting the needs of MNS members in their daily prac-

tice. In this vein, we are continuing to collaborate with NAN and Division 40 to support their actions on a national level. Locally, we have been working in many different ways. For example, we have established ties with Blue Cross Blue Shield Behavioral Health executives in order to demonstrate how we can provide relevant and important education about the neuropsychological treatment of their patients. In this manner, we hope to be involved in any future policy changes or amendments. We are also monitoring the policies of other local insurance companies so that we may be able to provide important and timely interventions should there be any complications with pre-authorizations, billing, or other related processes.

The PAC is also working to develop stronger ties with MNS members outside of the Boston area in order to assure we are meeting their needs. We are well-positioned to develop and strengthen alliances with other New England area neuropsychologists, which should further increase our ability to advocate on our behalf. Additionally, we are partnering more closely with other local societies and our neighbors in other New England states to adopt a “unified front” in progressing toward the achievement of mutual goals for the profession.

How you can help: The PAC is working to allow you to remain focused on your patients, training, and research. However, I urge you to think about how you might be able to help us support you in this venture. Although the members of this committee are especially vigilant about professional affairs issues, we are always interested in hearing your opinions and concerns. Therefore, please feel free to contact any of us if you have an issue that you feel needs to be addressed. We would also encourage you to consider responding to any advocacy messages we send your way.

Continuing Education Program in Full Swing

Sandra Shaheen, Ph.D.

The MNS Continuing Education team is working hard to schedule a range of programs to address the professional practice, clinical and research interests of our members with the monthly Tuesday evening seminar series. The December meeting featured a presentation on diagnosis and treatment of delirium by noted neurologist, **Dr. Sharon Inouye**, author of the most widely used inventory for screening delirium in hospital practice, the Confusion Assessment Method (CAM). Dr. Inouye developed a multi-component intervention strategy to prevent delirium, targeted towards six delirium risk factors. This strategy—published in a landmark study in the New Eng-

land Journal of Medicine—was successful in reducing delirium by 40%, demonstrating for the first time that a substantial proportion of delirium is preventable. Dr. Inouye is currently examining the pathophysiology of delirium during and after a delirium episode, utilizing neuroimaging and neuropsychological techniques.

Our November meeting featured the only NEPSY-II workshop in the Boston area, with test co-author **Dr. Sally Kemp**, arranged through the courtesy of Dr. Peter Entwistle and PsychCorp. This newly revised neuropsychological test battery for children includes several new domains for evaluating behavior of children including “Theory of Mind,” a category with specific sensitivity to children on the PDD spectrum. This two hour workshop drew over 90 participants and featured case materials, which illustrated the sensitivity of new subtests incorporated into the battery. September and October meetings were also exceptionally well-attended. **Dr. Laura Grande** joined us with a presentation of her work through the Boston VA on the CNS effects of blast injuries on veterans returning from Afghanistan and Iraq. Dr. Grande was the Cermak award recipient for this year (see below). **Dr. Jeremy Schmahmann** of MGH was welcomed to our October meeting where he presented a very stimulating review of his important ongoing work on cerebellar network contributions to cognitive and emotional functioning in children and adults.

For our first program of the new year, in January 2008, our very own MNS Secretary and Professional Affairs Committee Chair, **Dr. Kira Armstrong**, will join us to discuss Board Certification in Neuropsychology. Dr. Armstrong has recently co-authored a book with Drs. Dean W. Beebe, Robin Hilsabeck, and Michael Kirkwood on the benefits and process of this important professional credential called A Step-by-Step Guide to ABPP/ABCN Certification in Clinical Neuropsychology: How to Become Boarded Without Sacrificing Your Sanity. Please note that no Tuesday meeting is planned for February as many members will be attending INS in Wai-koloa, Hawaii. Seminars will resume on March 2nd with a social reception and open meeting beginning at 6:30 followed by the lecture at 7:30. The spring schedule will include the annual Edith Kaplan award lecture in May by **Dr. Carmen Armengol** presenting on “Neuropsychological Assessment in Diverse Populations.” We are confirming interesting talks for the remainder of the spring and fall on cognitive findings in bipolar pediatric patients, forensic issues, memory, and on the anticipated WAIS-IV.

Cermak Award Lecture: **Dr. Laura Grande** was the annual Cermak Award recipient whose work on memory and cognitive changes in soldiers returning from Afghanistan and Iraq brought a large gathering of members to our September reunion meeting. MNS was pleased to welcome Ms. Sharon Cermak to this special evening meeting. Dr. Grande earned her Ph.D. from the University of Florida where she completed practica in Medical and Health Psychology and Clinical Neu-

ropsychology with adults and children at Shands Hospital before returning to Boston in 2004 to complete her postdoctoral fellowship with Dr. William Milberg at the Department of Psychology, VA Boston Healthcare System. She is currently an Instructor of Psychology in the Department of Psychiatry at Harvard Medical School. Dr. Grande is an Ad Hoc Reviewer for the: Journal of the International Neuropsychological Society, Journal of Clinical and Experimental Neuropsychology, Alcohol Research and Health, and Clinical Psychology Review. Her grants have included Brief Cognitive Screening in Elderly Individuals and Patients with Diabetes, Brief Cognitive Screening in Individuals at Risk for Cerebrovascular Disease, and Cardiovascular Risk and Frontal Dysfunction in Black Elders with Dr. Milberg and Dr. Lipsitz. She has co-authored a chapter on amnesic disorders in *Clinical Neuropsychology, 4th Edition* (Heilman and Valenstein, Eds.) and co-authored numerous articles on executive function and memory in older individuals. Dr. Grande reflected on her time as a research assistant with Dr. Laird Cermak early in her career. MNS Board Member, Dr. Paul Spiers, served as a discussant for the evening and shared his recent experience at a Department of Defense Traumatic Brain Injury Planning Conference in Virginia last spring.

MNS wishes to continue to honor the legacy of Boston's fine teaching and research tradition by establishing a subcommittee of members to advise the Board of Directors (BOD) on nominees who best epitomize the spirit of Dr. Cermak's work. To this end, we welcome nominations of Dr. Cermak's colleagues who can aid the BOD in the annual search for young researchers in the field of memory. Subcommittee members will be expected to meet annually and interface with the continuing education committee. Those interested should contact Drs. Maxine Kregel or Sandie Shaheen at 617-232-4858 or by e-mail at longwoodneuropsychology@earthlink.net.

The Continuing Education Committee is looking for your feedback and participation: We are interested in adding breadth and depth to our Continuing Education series. We would like your recommendations for speakers or topics of interest to you, and, if you would like to present an interesting case study, or recent, even early stage, research, we are considering a format for bringing these to our members as well. Other planned education initiatives include setting up a standing subcommittee of MNS members to advise the Continuing Education Committee on Cermak award nominees, and a west-of-Boston lecture or symposium to meet the needs of MNS members who may not have easy access to central Boston but wish to become active with MNS programs. To participate in either of these initiatives, or to provide any suggestions or ideas for our Continuing Education series, please contact Dr. Sandie Shaheen at 617-232-4858 or by e-mail at longwoodneuropsychology@earthlink.net.

2006-2007 MNS Board of Directors Summary of Accomplishments

Dana L. Penney, Ph.D.

It is my pleasure as Past President of MNS to recap for you some of the many Society accomplishments made possible by the efforts of the 2006-2007 Board of Directors (BOD) and the support of many active members.

We raised the profile of MNS at the State and National levels by fostering relationships with other well-known scientific and professional organizations. As a result, MNS now has the opportunity to partner with other organizations on important issues, has better leverage to support our interests and enjoys reciprocal website listings and courtesy discounts for our members. MNS joined the Federation of Behavioral, Psychological & Cognitive Sciences as the Federation's first regional society. Federation membership strengthens representation for our scientists, advances our legislative advocacy initiative at the national level, and establishes a stronger relationship for MNS with scientific organizations including APA and NAN. The BOD placed emphasis on professional affairs and re-established the Professional Affairs Committee (PAC). Through PAC initiatives, we developed contacts with major insurance providers, resolved practice issues and worked together with MPA on joint concerns. In addition, we raised the profile of MNS at the public level by implementing a referral service that links consumers, including local medical and legal professionals, to our members.

We placed emphasis on improving the infrastructure of our society. We hired a permanent administrative assistant to provide administrative continuity, improve membership access and communication, and to make seamless annual Board transitions. We streamlined our membership procedures, resulting in a one month acceptance notification process for new member applications, revised our CEU lecture check-in and certificate process, and added a new announcements table.

We developed membership benefits, created an online membership directory and continued to build the MNS List

CONNECT WITH COLLEAGUES THROUGH THE LISTSERV

The MNS Listserv is a vibrant discussion group in which you can learn the latest news, pose professional questions to colleagues, and stay connected with the society.

Email admin@massneuropsychology.org for instructions to join the listserv. Be sure to include your full name in the email so the administrator can verify your membership in MNS.

serv. We developed the Get Connected Membership discount program providing annual opportunities for free CEUs and membership renewal discounts. A dual membership discount with APA was established resulting in an APA membership dues discount of up to 25% off basic APA dues (up to \$70 annually) for MNS members. We developed an online book raffle that takes only a few seconds to enter and provides an opportunity to win a free book each month.

We improved our financial status through the initiation of cost saving measures, improved dues collection, the development of sponsorship relationships with other businesses and increased membership numbers. Through improved dues collection and membership initiatives, we realized more than a 20% increase in dues paying members this year when compared to 2005-2006.

With these and other initiatives, MNS continues to be a strong, vibrant society working actively to advance the interests of neuropsychologists in the region. MNS is an all-volunteer organization and we encourage you to meet new colleagues and get involved in MNS activities. With all of us working together, even small volunteer efforts can make a major difference. If you are interested in finding out more about how you can get involved, send us an e-mail via the MNS website at www.massneuropsychology.org (select "contact us") or talk to any of our BOD members. We welcome your participation and ideas on how to serve you better.

Update from the Membership Director

Sara J. Hoffschmidt, Ph.D.

Our membership has grown considerably in the time since I took over as Membership Director in Fall 2006. Thanks to everyone who participated in the "Get Connected" program and referred new members or encouraged former members to re-join.

The Board of Directors of MNS would like to welcome the following people, and we look forward to seeing you at MNS events!

Regular Members

Kira Armstrong, Ph.D.
 Anne Bellefeuille, Ph.D.
 Ellen Chamberlain-Coste, Ph.D.
 William Goodman, Psy.D.
 Michelle Imber, Ph.D.
 Linda Isaacs, Ph.D.
 Caitlin Macaulay, Ph.D.
 Arthur Maerlender, PhD
 Susan McLaughlin-Beltz, Ph.D.
 Nancy Norton, Ed.D.
 Karen Postal, Ph.D.
 Joan Swearer, Ph.D.
 Elizabeth Tamborella, Ed.D.
 Hedy Wald, Ph.D.
 Rachel Wiseman, Psy.D.

Britt Carlson Emerson, B.S.
 LaShanda Harvey, M.A.
 Kelly Jones, M.S.
 Kelly Karl, M.A.
 Kristy Klein, M.A.
 Arthur Kosmopoulos, B.A.
 Thomas Laudate, M.A.
 Athene Lee, M.S. Sc.
 Shannon Lundy-Krigbaum,
 Ph.D.
 William Michael Palmer,
 M.A.
 Karen Mikolic, M.S.
 Lavinia Pinto, M.A.
 Anya Potter, B.S.
 Mikaela Sebree, Ph.D.
 Daniel Seichepine, M.A.
 Angela Tamborella, B.A.
 Alex Taylor, M.A.
 Maria Valmas, M.A.

Student Members

Lee Ashendorf, Ph.D.
 John Den Boer, M.A.

Membership Benefits

- ♦ Dual MNS/APA Membership Discount - Reduce your APA membership cost by up to \$70. Check your APA dues statement for dual membership details
- ♦ Receive information on national grants and other research funding opportunities through newsletters available exclusive through our association with The Federation for Behavioral Psychological, and Cognitive Sciences
- ♦ Professional Affairs Advocacy
- ♦ Online Membership Directory
- ♦ MNS Listserv
 - ♦ Up-to-date practice advisory notices
 - ♦ Stay in touch with current issues
 - ♦ Connect with colleagues
 - ♦ Get referrals
- ♦ Membership Discount at Monthly CEU lectures, and select reciprocity discounts with other organizations' events
- ♦ Online book raffle
 - ♦ Try your luck at winning a new book each month!
- ♦ MNS Website
 - ♦ Information on MNS happenings and other local events
 - ♦ Website resources
 - ♦ Simple dues payments
 - ♦ One-click access to Board Members
 - ♦ Members-Only Section
- ♦ Free parking at Monthly lectures — just show your membership card to waive parking fees
- ♦ MNS newsletter — Issued twice yearly.

MNS Member Spotlight: Paul Spiers, Ph.D.

To kick off our new "MNS Member Spotlight" feature, we present the following article on our new Board of Directors member, Dr. Paul Spiers. We invite similar submissions highlighting accomplishments of other MNS members (noteworthy publications, humanitarian endeavors, kudos, etc.) - send us an e-mail via the MNS website at www.massneuropsychology.org (select "contact us").

This article about Dr. Spiers is reprinted with permission from *The Boston Globe*.

Trauma turns visitor into farm regular

*By Wendy Killeen, Globe Correspondent
May 17, 2007*

Paul Spiers's initial involvement with Windrush Farm was academic.

A neuropsychologist, he often visited the Boxford farm-- which works with riders who are physically, emotionally, or learning disabled -- to share his knowledge of head trauma with members of the staff. Also an equestrian and polo player, he later donated two of his polo ponies to Windrush, with his beloved Roland becoming one of its top mounts.

Then in 1994, Spiers fell from a horse while fox hunting. He suffered head trauma and a spinal cord injury that left him paralyzed from the chest down.

When he returned to Windrush, it was as a disabled rider himself. And he was reunited with his longtime mount, Roland, for therapy.

"Marj got me to ride," Spiers, 53, of Danvers, said of Marjorie Kittredge, who founded Windrush in 1964. "Then she got me on the board, and on the board of the national organization."

Spiers still works as a neuropsychologist; he is an assistant professor in the Department of Psychiatry at Boston University School of Medicine and a visiting scientist at the Massachusetts Institute of Technology's General Clinical Research Center and at Massachusetts General Hospital.

He is also president of the boards of both Windrush and the North American Riding for the Handicapped Association, which has 700 facilities across the country.

"I'm not quick enough to say no," Spiers said.

Roland was retired after eight years of service at



Windrush. Following his death, he was honored for excellence in multiple disciplines with the 2001 Cosequin Equine Exemplary Service Award. He and Spiers also are featured in "The Healing Touch of Horses," a Handicapped Association book written by A. Bronwyn Llewellyn.

For their special relationship, Roland and Spiers were chosen by the United States Equestrian Foundation in 2005 for "Hoofprints from the Heart" honors.

Now, Spiers is helping launch the national Horses for Heroes program for disabled veterans, which is being piloted at Windrush.

"He's an amazing man," said Mandy Hogan, executive director of Windrush. "An inspiration."

The Federation of Behavioral, Psychological & Cognitive Sciences

Linda Zoe Podbros, Ph.D.

In January 2007, MNS was accepted as the first ever regional society in The Federation of Behavioral, Psychological & Cognitive Sciences. The Federation is a dues-supported coalition of organizations that represents the interests of scientists conducting research in behavioral, psychological and cognitive sciences by supporting legislative advocacy, education and the communication of information to scientists. As members of The Federation, MNS joins 21 other organizations, including NAN and APA, to ensure national level exposure of our interests in the areas of science policy, national support for research, and education and training.

I am pleased to serve as MNS's Council Representative to The Federation. I have been an active member of MNS since the beginning of the organization. From 1991 to 1994, I served on the MNS Board, and from 1990 to 1995, I served as the Chair of Publications and edited the MNS Newsletter. Prior to beginning graduate school, I served as a research assistant to Dr. Nelson Butters at the Boston VA. I then went onto Stony Brook University to work with Dr. John Stamm on his seminal primate frontal lobe research. In 1976-77, I spent a year working with Dr. Maria Wyke at the National Hospital for Neurological Disorders in London, England, involved in both clinical work and research. In 1981, I completed my Ph.D. working with Parkinson's patients. Over the years, I have served on the staff of a number of rehabilitation hospitals -- Braintree Hospital, Tufts-New England Medical Center, Spaulding Hospital, and the Rehabilitation Hospital of the Cape and Islands (RHCI), working primarily with adult patients with neurological disorders. In 1995, I was part of the startup of RHCI, with the responsibility to develop and direct adult neuropsychological services. Although I continue to be on the staff at RHCI, I recently opened an office in Sandwich, where I maintain a busy outpatient practice. I also serve as a Consultant to the Massachusetts Statewide Head Injury Program, a role I have enjoyed

since 1988. In addition to my role as the Council Representative to The Federation, I am a current MNS Board Member and a member of the MNS Professional Affairs Committee.

On December 3rd, I represented MNS at The Federation's 2007 annual meeting in Washington, DC. The day long meeting included talks and discussions with Dr. David Shurtliff, Director of the Division of Basic Neuroscience and Behavioral Research, National Institute of Drug Abuse (NIDA), who presented funding opportunities for behavioral scientists now available through NIDA, Dr. Grover Whitehurst, Director of the Institute of Education Sciences, who spoke about the need to improve quality and positive outcomes in education, and Dr. Chester Gipson, Deputy Administrator, United States Department of Agriculture who spoke on animal care in research. There was also a roundtable discussion on designing an X-Prize in the behavioral sciences. More details about this meeting will follow in the Spring 2008 newsletter.

As a society member of The Federation, MNS members are entitled to certain benefits. One benefit is the APA dual society membership, a savings of up to \$70.00. Another benefit is the Federation's e-Newsletter. The Federation newsletters include updates on funding opportunities, information about legislation that may affect the behavioral science community, and reports on the Federation's national advocacy efforts on behalf of the psychological and brain sciences. Past issues can be viewed at the Federation website <http://www.thefederationonline.org/newsletters.html>.

Please follow the instructions below to subscribe to the Federation Newsletter:

1. Send an email to listserv@lists.apa.org
2. Do not put any text in the subject line
3. In first line of the text area, by example, if your name is Joe Smith, type: SUB federationnewsletter Joe Smith

Periodically, through the MNS website, I will post various issues and opportunities, as they are delineated by The Federation.

2007 Science Symposium Review

The 16th Annual Science Symposium and Poster Session

Anthony J. Giuliano, Ph.D. and Raquelle Meshulam-Gately, Ph.D.

The Massachusetts Neuropsychological Society held its 16th Annual Science Symposium and Poster Session on June 5th in a new venue this year: the Sackler Center at Tufts University School of Medicine in Boston. For the 70 attendees, the evening began with food and a social hour. This year's Poster Session was much larger than usual, and featured 32 poster presentations by 25 different presenters. The first

author presenters, their institutional affiliations, poster titles and abstracts are listed on the following pages. The MNS Board of Directors (BOD) offers thanks and congratulations to each of this year's poster presenters.

The MNS BOD also offers its gratitude to the three MNS members who volunteered their time and expertise as poster judges. They were Dr. Jane Bernstein of Children's Hospital, Dr. Carol Leavell of Braintree Rehabilitation Hospital, and Dr. Margaret Lanca of Cambridge Health Alliance. After careful review, they selected Lindsay G. Miami, M.A., a doctoral student in Suffolk University's Clinical Psychology program, as the recipient of this year's Nelson Butters Award for Scholarship in Neuropsychology (Best Student Poster Award). Her poster was entitled "Awareness of the Environment" and investigated the impact of perceptual load on sensory awareness. The award included a \$250.00 cash prize that was presented to Ms. Miami during the program introduction.

Current MNS President, Dr. Joel Rosenbaum, provided the welcome to attendees, as well as a brief summary of his work in Professional Affairs over the past year and his leadership vision for MNS over the next year. Past President, Dr. Dana L. Penney, recognized outgoing MNS Board Members with kind words and a plaque presented to Dr. Clare O'Callaghan, MNS Past President during 2005-2006, Dr. David Wolff, Editor of the revived MNS Spring 2007 Newsletter, Dr. Anthony J. Giuliano, MNS Secretary from 2004 to 2007, and Dr. Mimi Boer Castelo, MNS Student Representative. Dr. Penney also welcomed incoming Board Members, Dr. Kira Armstrong, MNS Secretary, and Drs. Linda Podbros and Paul Spiers, MNS Members-at-Large. Dr. Edith Kaplan then presented this year's Kaplan Award to her former mentee, Dr. Carmen Armengol, for her significant contributions to multicultural neuropsychology. Dr. Kaplan, as only she can, then provided a generous introduction to the evening's keynote speaker, Dr. Stephen Rao.

Dr. Rao, a native of Providence, RI, and now Professor, Ralph and Luci Schey Chair and Director of the Schey Center for Cognitive Neuroimaging at the Cleveland Clinic in Ohio, and Editor of APA's journal *Neuropsychology*, gave a cutting-edge talk entitled the Role of fMRI in Preclinical Detection of Neurodegenerative Disorders. His presentation provided a brief introduction to the young 15-year history of fMRI as a brain mapping tool. He emphasized that the popularity of fMRI could be attributed to its relative ease of use and noninvasiveness, its sensitivity and reproducibility, and its superior temporal and spatial resolution relative to other functional imaging methods such as positron emission tomography (PET). He then went on to elegantly summarize fMRI studies conducted with patient groups with preclinical neurodegenerative disorders, particularly in individuals in the preclinical stages of Alzheimer's disease (AD) and Huntington's disease (HD). Dr. Rao noted that the eventual goal of this research is to improve clinical diagnosis at the earliest

stages of disease progression, and to assess the effects of early interventions. To this end, Dr. Rao discussed the recent development of fMRI-specific CPT codes that were initiated in January 2007 for presurgical mapping of patients with brain tumors and epilepsy, thus paving the way for expansion of comparable fMRI-specific CPT codes for assessment and monitoring of neurodegenerative disorders. His presentation concluded with a critical evaluation of the evidence for and against the use of fMRI as a clinical tool for the assessment and management of preclinical neurodegenerative disorders in AD, HD, multiple sclerosis and Parkinson's disease.

Our 2008 Symposium will include a 20th Anniversary Gala Celebration - details will be posted on the MNS website, and sent through postal mail and e-mail within the next few months - please keep your eyes peeled! Happy 20th Birthday to MNS!

Poster Session Abstracts

(* students, trainees and research associates denoted by asterisks)

1 * Rebecca Adams (Suffolk University), "Attention Deficit Hyperactivity Disorder and Eye-Tracking in a Virtual Reality Classroom: A Pilot Study"

Abstract: This pilot study examined differences in attentional processes between children with attention deficit hyperactivity disorder (ADHD) and controls utilizing an eye-tracking device. Additionally, relationships between eye-tracking variables, performance on a continuous performance task, and parental ratings were examined. Sixteen boys, nine with a diagnosis of ADHD and seven controls, aged eight to fourteen, engaged in a virtual reality classroom presentation of a continuous performance task while eye-tracking was recorded. Although there were no statistically significant differences between the ADHD group and controls on the eye-tracking measures, robust effect sizes were obtained, suggesting that with larger samples the differences would be significant. Additionally, for the ADHD group, significant! ! correlations (r s ranging from .72 to .90) were found between the eye-tracking measures and percent of targets correctly identified on the virtual reality CPT, while no relationships were found for the control group. Results indicate that children with ADHD miss targets due to not looking when the cue appears, rather than failing to mobilize in response to cues. Parent ratings of attention problems on the Behavior Assessment System for Children (BASC) Monitor for ADHD were also related to eye-tracking measures in both groups (positively for the ADHD group and negatively for the controls), and to hyperactivity in the ADHD group. These results demonstrate the utility of using eye-tracking to study attentional processes.

2 * Rebecca Adams (Suffolk University), "The Virtual Reality Classroom: A Novel Approach to Understanding Attention Deficit/ Hyperactivity Disorder (ADHD)"

Abstract: In this study, 35 boys, 19 with a diagnosis of ADHD and 16 age-matched controls aged eight to fourteen, were compared in a virtual reality (VR) classroom delivered version of a continuous performance task (CPT), with a second standard CPT presentation. The Virtual Classroom included simulated "real-world" auditory and visual distractors. Both tests used the same projection display dome system to conduct the tests under equivalent viewing conditions. There was a trend towards a significant difference between the ADHD group (who performed worse) and the control group when the CPT task was presented in the context of the Virtual Classroom, but not when the standard CPT was used. Parent ratings of attention, hyperactivity, internalizing problems and adaptive skills on the Behavior Assessment System for Children (BASC) Monitor for ADHD confirmed that ADHD children had more problems in these areas than controls. Results are discussed in relation to the impact of distractors on children with ADHD.

3 * Stacy Anderson (Boston University School of Medicine), "Neuropsychological Assessment of Centenarian Offspring"

Abstract: Objectives: Centenarian offspring have been shown to delay or escape the diseases associated with aging, particularly cardiovascular disease. We assessed the performance of centenarian offspring compared to controls in a pilot study on a short cognitive battery. Methods: Portions of the Neuropsychological Assessment Battery, including the entire screening module, three portions of the executive functions module (Judgment, Categories, and Word Generation), and the Driving Scenes subtest of the Attention module were administered to 40 centenarian offspring and 51 controls. 45% of offspring were female compared to 49% of controls. Offspring had a mean years of education of 15.6 (SD 2.5) compared to 15.2 (SD 2.3) for controls. Results: We analyzed raw scores, standardized scores, percentiles, and interpretive classifications based on scaled scores for the tests listed above. Our preliminary analyses suggest that offspring performed better than controls on the screening module of the NAB ($p < 0.05$). On the Word Generation subtest of the Executive Functions Module offspring were able to generate 2.5 more words on average than controls ($p = .01$). When looking at the normed categorical data for this test we found that offspring were more likely to fall in to the above average category (50% of offspring compared to 14% of controls) than controls who were more likely to fall in to the average category (60% of controls versus 30% of offspring). Controls were also more likely to be classified as impaired on the Digit Span test (24% of controls versus 8% of offspring, $p = .01$). Conclusions: Centenarian offspring performed better than offspring on a test of overall cognitive function. In addition offspring are

performing at a better than average level on a test of executive function whereas controls were more likely to score in the average range for their age. Offspring also showed lower rates of cognitive impairment than controls on a test of attentional capacity. This suggests that centenarian offspring are showing less cognitive decline with age as they outperform their age-matched controls.

4 * Lee Ashendorf (Alzheimer's Disease Clinical and Research Program, Boston University School of Medicine), "Grooved Pegboard Test Performance among Cognitively Normal Elders and Individuals with MCI"

Abstract: Objective: The Grooved Pegboard Test (GPT) is a measure of manual dexterity and motor speed. To date, older adults have been underrepresented in the test's normative literature despite the strong relationship between advancing age and slowing GPT performance. Our objective was to provide elderly normative GPT data and to examine GPT performances among cognitively intact participants and individuals with mild cognitive impairment (MCI). Participants and Methods: Participants were enrolled through the Boston University Alzheimer's Disease Core Center patient/control registry. The sample ranged from 50-89 years (71.5±8.1 years, 61.6% female) and included cognitively normal elders (n=155) and individuals with MCI (n=139). Consensus diagnoses were made by a multidisciplinary diagnostic team. GPT performance was recorded in seconds for dominant and non-dominant hands. Results: Age and education, but not gender, were found to be related to GPT performance among the cognitively intact sample; therefore, normative data for dominant and non-dominant hand performance are presented by age (56-69, 70-79, and 80-89) and education (<16 years and college graduates). An ANCOVA (controlling for age, education, and sex) revealed diagnostic group differences in the expected direction (i.e., cognitively normal elders > MCI) for both dominant and non-dominant hands. Conclusions: Among cognitively normal elders, GPT performance is related to age and education. As expected, cognitively normal elders outperform MCI participants. This finding is likely related to reduced dexterity with evolving cognitive decline.

5 * Lee Ashendorf (Alzheimer's Disease Clinical and Research Program, Boston University School of Medicine), "Older Adult Normative Data for Trail Making Test Errors"

Abstract: Objective: The Trail Making Test (TMT) regularly ranks among the most commonly-used neuropsychological measures, and it has been used with a variety of patient populations. Interpretation of the TMT has traditionally been limited to examination of the time to completion of the test. The error rates on both parts of the TMT (A and B) are often considered qualitatively, but have limited empirical support, particularly in older adult populations. The aim of the present study was to describe TMT error frequencies in

a sample of healthy, older adults. Participants and Methods: All participants were enrolled through the Boston University Alzheimer's Disease Core Center (BU-ADCC) patient/control registry. A sample of 218 healthy, older adults between the ages of 55 and 98 (M = 72.6, SD = 8.7) were identified by a multidisciplinary diagnostic review team consisting of specialists in neurology and neuropsychology. Exclusion criteria for the present study included a consensus diagnosis of dementia or mild cognitive impairment, a history of major psychiatric illness, other neurological illness, or head injury with loss of consciousness. Results: Error rates on both TMT-A and TMT-B are reported in cumulative percentages. For TMT-B, data are reported by age (55-69 and 70-98) and education (<16 years and 16+ years). Conclusions: This study reports normative data for TMT error rates. As the commission of errors can be elevated in clinical populations (e.g., Mahurin et al., 2006), these data add useful information to aid in the clinical interpretation of TMT performance.

6 * Lee Ashendorf (Alzheimer's Disease Clinical and Research Program, Boston University School of Medicine), "Test-Retest Consistency of the WRAT-3 Reading Subtest among Older Adults"

Abstract: Objective : The Wide Range Achievement Test-3 (WRAT-3) Reading subtest is used in dementia evaluations to estimate premorbid intelligence and education quality, particularly among racially diverse elders. However, the test-retest reliability of this measure is unclear when assessing elders with and without cognitive impairment. Participants and Methods: Participants, ages 50-104 (73.2±8.5 years old; 62.5% female, 80% Caucasian), were enrolled through the Boston University Alzheimer's Disease Center patient/control registry. A multidisciplinary consensus team diagnosed individuals as cognitively normal elders (n=158), mild cognitive impairment (MCI; n=111), or Alzheimer's disease (AD; n=40). WRAT-3 Reading scaled scores from the Tan test form were obtained at two consecutive annual neuropsychological evaluations. Results : Test-retest reliability for the entire sample (n=309) was $r=0.89$ (SEM=3.2). The MCI group had the highest reliability ($r=.92$); the control ($r=.79$) and AD ($r=.80$) groups were also strong. When scores were assigned descriptive labels recommended by the test manual (e.g., 90-109="average," 80-89="low average"), the descriptor changed between the two time points for 28.5% of the entire sample, regardless of diagnosis or racial group. Conclusions : Test-retest reliabilities for the WRAT-3 Reading subtest among our older and cognitively diverse cohort were strong, consistent with prior investigations using younger samples, and supportive of the overall stability of this test. However, categorical descriptions of performance may be adversely influenced by subtle variability in individual scores.

7 * Lee Ashendorf (Alzheimer's Disease Clinical and Research Program, Boston University School of Medicine), "Utility of Trail Making Test Errors in MCI and AD"

Abstract: Objective : Although Trail Making Test (TMT) time scores are often used to assess cognitive impairment, error frequency is not traditionally used beyond qualitative observation. This study sought to establish an empirical basis for using TMT errors in assessing older adults for mild cognitive impairment (MCI) or Alzheimer's disease (AD). Participants and Methods: All participants, ages 55-98, were enrolled through the Boston University Alzheimer's Disease Core Center (BU-ADCC) patient/control registry. A multi-disciplinary diagnostic review team classified individuals as healthy controls (n = 218), MCI (n = 139), or AD (n = 48) using Petersen et al. (2004) workgroup criteria for MCI and NINCDS-ADRDA (McKhann et al., 1984) criteria for AD. Exclusion criteria included history of major psychiatric illness, other neurological illness, or head injury with LOC. Results: As expected, control participants committed fewer TMT B errors than MCI ($X^2=47.8$, $p<.001$) and AD ($X^2=67.9$, $p<.001$) participants, though MCI and AD participants were not discrepant from each other. To predict diagnostic classification using TMT scores, a TMT B time z-score of -1.0 and an error score ≥ 1 were used. Classification accuracy statistics using (1) error score, (2) time score, (3) error and time score, and (4) error and/or time score were compiled for each set of diagnostic comparisons. Conclusions : The positive predictive power (PPP) of using a combined error-and-time algorithm was greater than the PPP of the TMT B time score alone, advocating for the use of both variables in the identification of cognitive impairment in older adults.

8 * Colleen Barber (Geriatric Research, Education and Clinical Center, VA Boston Healthcare System), "The Relationship of Source Memory and Item Memory to Cerebrovascular Risk"

Abstract: Cerebrovascular (CV) risk factors, such as hypertension and diabetes, have been linked to poorer performance on neuropsychological measures of executive function that likely reflects neuropathological changes to the frontal lobes. Given the compromise in executive function in general, it is also possible that increased CV risk may adversely affect "executive" aspects of memory function, such as contextual monitoring and retrieval, while influencing encoding and storage to a lesser degree. To address this possibility, we developed an experimental task that attempted to dissociate executive contributions from declarative contributions of memory function. Specifically, our task investigated source memory (SM) as an index of executive contributions to memory, and recognition item memory (IM) to index the declarative component. We predicted that CV risk factors would differentially affect IM and SM performance, with the latter experiencing greater detriment. Forty-six older adults with varying levels of CV risk completed comprehensive, standardized neuropsychological testing of memory and executive function, as well as experimental tasks of IM and SM. CV risk was examined using several individual risk fac-

tors, such as blood glucose levels and systolic blood pressure. Outcome variables for IM and SM included recognition (% hits), discrimination (d') and false alarms (FA). Participants were divided into quartiles based on CV risk factors; significant group differences resulted between the highest and lowest groups on standardized and experimental neuropsychological tasks. Individuals with higher blood glucose levels showed significantly poorer recall on the California Verbal Learning Test-II (CVLT-II), with group differences on IM indexes approaching significance such that higher glucose levels were associated with lower performance. Importantly, participants with higher systolic blood pressure performed significantly worse on all aspects of SM (% hits, d' , FA). SM variables, but not IM variables, significantly correlated with recognition and recall performance on several standardized tasks (e.g., CVLT-II; Logical Memory, WMS-III; Rey Osterrieth Figure Drawing). Furthermore, SM was significantly associated with more specific, executive aspects of memory within the standardized memory measures; increased SM performance (% hits, d') negatively correlated with CVLT-II intrusions, whereas increased rates of SM false alarms correlated with more CVLT-II intrusions, false positives and repetitions. Interestingly, fewer perseverative responses on the Wisconsin Card Sorting Test, a measure of executive function, correlated with better SM performance, providing additional support for the ability of the experimental SM measures to tap into higher order, contextual aspects of memory. These results are consistent with our hypotheses and suggest that performance on an experimental task of SM is related to the "executive" aspects of memory that are more closely tied to frontal lobe function, which in turn, is more likely to be affected by increased CV risk. Also of note are the significant memory performance differences in the high and low glucose groups; recent findings have shown that glucose is more closely linked to changes in medial temporal function as well as frontal lobe function. Continued data collection in the present study will increase our understanding of the differential influence of various CV risk factors on different domains of memory and cognition.

9 * Ruth Barr (Massachusetts General Hospital), "The Effects of Transdermal Nicotine on Cognition in Non-Smokers with and without Schizophrenia: A Randomized Placebo Controlled Trial"

Abstract: Increasing evidence indicates that the neuronal nicotinic acetylcholine receptor system is dysregulated in schizophrenia and may contribute to cognitive deficits described in this disease. Furthermore, nicotinic agonists may have potential in the treatment of cognitive impairments in schizophrenia. This study investigated the effects of nicotine on attention in subjects with schizophrenia (n=28) and healthy controls (n=32). All participants were non-smokers in order to eliminate confounding effects of nicotine withdrawal and reinstatement that may occur in smokers. Subjects received 14 mg transdermal nicotine and identical placebo

in a randomized, placebo controlled, crossover design. The primary outcome measure was the Continuous Performance Test Identical Pairs Version (CPT-IP). A cognitive battery was conducted before and 3 hrs after each patch application. Data was analyzed using a repeated measures analysis of variance (ANOVA) with time (pre- versus post-dose) and treatment (nicotine versus placebo) as within subject factors, and group (schizophrenia versus control) as between subject factors. Nicotine improved performance on the CPT-IP in both groups as measured by a reduction in hit reaction time (HRT) (time x treatment interaction $F_{1,58} = 20.35$, $p < 0.0001$), HRT standard deviation ($F_{1,58} = 8.23$, $p = 0.006$) and random errors ($F_{1,58} = 13.23$, $p < 0.001$). In addition, nicotine reduced commission errors on the CPT-IP to a greater extent in those with schizophrenia versus controls with a reduction in false alarms (time x treatment x diagnosis interaction $F_{1,58} = 7.576$, $p < 0.01$) and random errors ($F_{1,58} = 5.41$, $p = 0.02$). Nicotine also improved performance on a Card Stroop task as measured by interference T-score to a greater extent in schizophrenia versus controls (time x treatment x diagnosis interaction $F_{1,55} = 4.87$, $p = 0.03$). Nicotine improved attentional performance in both groups and was associated with greater improvements in inhibition of impulsive responses in subjects with schizophrenia. These results confirm previous findings that nicotine improves attention and suggest that nicotine may specifically improve response inhibition in schizophrenia.

10 * Callie Comtois (Boston University School of Public Health, Boston VA Medical Center), "Health Symptom Correlates Among Military Pesticide Applicators from GWI"

Abstract: Objective: Exposure to acetylcholinesterase inhibiting pesticides has been advanced as an explanation for the persistent health complaints of the veterans of the first Gulf War (GWI). The goal of this study was to evaluate the relationship of pesticide exposure on the total health symptom reporting of GWI veterans with known pesticide exposures and to correlate their health symptoms with cognitive performance. Participants and Methods: Study participants were a unique group of 100 military pesticide control personnel from the GW including pesticide applicators (high-exposed group) and preventive medicine specialists (low-exposed group). Each study participant completed a comprehensive battery of neuropsychological tests, psychological interviews and health symptom/exposure assessment questionnaires. Each participant was then categorized as to whether they met CDC criteria for Chronic Multisymptom Illness (CMI) based on their responses on the Health Symptom Checklist (HSC) questionnaire. Total health symptoms were also calculated based on the HSC responses. It was hypothesized that the high-pesticide exposed group would report more total health symptom complaints and meet CMI criteria significantly more often than the low-pesticide exposed group and that classifications would correlate with cognitive functioning. Results:

Chi-square analyses showed that the high-pesticide group was significantly more likely to meet criteria for CMI compared with the low-pesticide group ($p < .01$). Univariate analyses of the HSC scores showed a significant relationship between total health symptoms reported and pesticide exposure categories ($p < .01$). MANOVA analyses showed that total health symptoms were significantly associated with slower response time on CPT mean reaction time and Purdue Pegboard non-dominant hand ($p < .01$). Conclusions: These preliminary findings suggest that GW veterans with high pesticide exposures were more likely to meet self-report criteria for CMI than their low-exposed counterparts. In addition, total number of self-reported health symptoms was also related to pesticide exposure. The higher exposed group reported more total current health symptoms which were correlated with reduced motor skill performance.

11 * John DenBoer (VA Boston Healthcare System, Boston University School of Medicine, The University of Montana), "Wechsler Adult Intelligence Scale – Third Edition (WAIS-III) Performance Predicts Vocational Outcome Among Traumatic Brain Injury (TBI) Outpatients"

Abstract: Objective: The purpose of this study was to examine the use of neuropsychological assessment measures as predictors of vocational performance in a sample of outpatients with TBI. Participants and Method: Participants were 16 patients (9 males, 7 females; mean age = 41.75 years) undergoing neuropsychological assessment as part of an outpatient brain injury rehabilitation program. Patients had varying severity levels of TBI: mild TBI = 6, moderate TBI = 6, severe TBI = 4. Time elapsed since TBI varied significantly (average = 6 years). Participants completed a full-day battery of standard neuropsychological measures. Results: Standard multiple regression analysis revealed that a grouping of WAIS-III Full Scale IQ, Performance IQ, Verbal Comprehension IQ, Perceptual Organization IQ, and Processing Speed IQ were shown to significantly predict the number of hours TBI patients worked during the week ($F = 7.713$, $p < .05$, Adjusted $R^2 = .79$). Performance IQ and Perceptual Organization IQ were shown to make the largest explanatory contributions ($\beta = 4.65$ and $\beta = -4.50$, respectively), while Processing Speed IQ was shown to have the largest unique contribution (standardized $\beta = -2.11$, $p = .013$). Measures of executive functioning and memory were not significant in predicting vocational performance. Conclusion: Although executive functioning and memory measures were not effective predictors of vocational outcome, a combination of WAIS-III variables (most notably Perceptual Organization IQ and Processing Speed IQ) were effective in predicting a significant amount of the variance in hours worked per week among a sample of TBI patients in an outpatient rehabilitation program.

12 * Lyla El-Messidi (Geriatric Research, Education and Clinical Center, VA Boston Healthcare System), "

Brief Cognitive Assessment of Older Individuals Using the Cabinet Memory Test

Abstract: The Cabinet Memory Task (CMT) was created as a brief neuropsychological measure designed to test many aspects of memory, including immediate and delayed item and location memory. The current study examined the effectiveness and ecological validity of the CMT in assessing these components. Thirty-nine community-dwelling, elderly African-American and Caucasian participants (15 male, 24 female) were administered the CMT as part of larger study evaluating cardiovascular disease and frontal lobe functioning. Participants were divided into four groups based on the encoding list used (A or B) and discrimination level (Simple or Difficult) of the CMT. Performance between groups was examined in relation to additional neuropsychological measures. As expected, significant differences in item memory between the two discrimination groups were found on immediate item recall ($F = 6.23, p = .02$) and delayed recall object ($F = 4.19, p = .05$). This significant difference illustrates that participants in the Difficult Discrimination group had greater difficulty discriminating between 2 objects similar in appearance than those in the Simple discrimination group, who were shown objects that had distinctively different features. Performance on immediate recall location ($F = .09, p = .77$) and delayed recall location ($F = 2.03, p = .16$) did not differ across the Simple Discrimination and Delayed Discrimination groups. As hypothesized, the CMT memory measures correlated significantly with several memory (e.g., Logical Memory I & II from the Wechsler Memory Scale – Third Edition) and executive function measures (e.g., Trail Making A & B). The ceiling performance of participants on immediate item memory prevented any correlations with other measures. These findings suggest the CMT may be useful for cognitive screening in aging individuals.

13 * Britt Carlson Emerton (Suffolk University, Mass. General Hospital), “Discordant IAP and fMRI language lateralization: A case report and cautionary tale”

Abstract: Accurate determination of language dominance is crucial in the pre-operative assessment of patients with structural lesions near traditional cortical language areas. The Intracarotid Amytal Procedure (IAP) is a widely used and repeatedly validated, but invasive test for determining language and memory lateralization. While the IAP remains the standard of care for determining language and memory dominance, a common goal is to replace IAP with non-invasive clinical fMRI to identify functional cortex near lesions to be resected. Recent research offers mounting evidence of reliable concordance between the IAP and fMRI language localization procedures; however, isolated cases of divergent IAP and fMRI language localization results have been reported. We present such a case. The patient is a 36-year-old right-handed man who, following emergency care for two generalized seizures, was found to have a large left frontal lobe tumor. Prior

to surgical resection, fMRI was performed using standard tasks designed to elicit language localization. Subsequently, unilateral IAP was conducted to assess language functions of the right hemisphere. Results from fMRI indicated exclusive right hemispheric language representation. In contrast, unilateral IAP testing revealed no receptive or expressive language functions, suggesting complete left hemispheric dominance for language. In this case, sole reliance on fMRI would have led to assumed right hemisphere language dominance and may have resulted in significant post-operative language impairment.

14 * E. Lela Giannaris (Boston University School of Medicine), “A metric of visual function in rhesus monkeys and its use in the assessment of age-related changes”

Abstract: Electrophysiological studies of rhesus monkey primary visual cortex have reported age-related decreases in orientation and direction selectivity independent of retinal or ocular pathologies, suggesting a decline in cortical visual function. Behaviorally, visual function has been assessed in monkeys by performance on tests of degraded figures and contrast sensitivity. While the aim of these tests is to assess visual abilities, actual performance depends upon the cognitive functions of memory and application of the non-matching rule. This is a potential confound in studies of normal aging due to the existence of age-related cognitive deficits. In order to resolve this, the present study developed a behavioral metric to assess visual function independent of cognitive deficits. This metric is based on the repeated span scores on the spatial and object stimulus conditions of the delayed recognition span task (DRST) that differ only in the salience of the visual target. To calculate this metric, the repeated spatial span score is subtracted from the repeated object span score then divided by the sum of these scores. Similar cognitive demands exist in both conditions as monkeys must identify the new stimulus among an increasing array of previously rewarded stimuli. In the spatial condition, monkeys are rewarded when they correctly displace the plaque just added among an array of identical brown plaques based only on novel spatial location. In the object condition, monkeys are rewarded when they identify the novel object among multiple objects that differ markedly in shape, size and color. Hence, the object stimuli are more visually salient. Spatial location is controlled for between conditions as stimuli appear in the same location across successive trials in both conditions. Based on electrophysiological studies, it is hypothesized that with age, scores on the visually demanding object task will decrease more than the spatial task, resulting in a decreased value of the metric. A significant negative linear relationship was found between this metric of visual function and age. In order to assess visual function contributions to cognitive tasks, this metric was compared to performance on tasks of learning (DNMS), executive function (CSST), and memory (DRST). Analysis of the relationship between this metric and various cognitive tasks indicated that

visual function contributes differentially to cognitive tasks. This metric of visual function could be useful in isolating declines in visual function from cognitive deficits in aged monkeys. Further work will determine if there are morphological correlates to this decline in visual function with age.

15 * Sarah Greene (Boston University School of Medicine), "Co-morbidity in Alzheimer's Disease: A Case Study"

Abstract: Introduction: In patients with Alzheimer's disease (AD) co-morbidity of a second disease has been shown to increase the rate of cognitive decline. Without proper diagnostic testing and subsequent treatment, such cognitive decline may be mistaken for the natural progression of AD, contributing to an unnecessary decreased quality of life. This case study highlights the importance of continued diagnostics to rule out underlying co-morbid illnesses that may be contributing to cognitive decline associated with AD by reviewing the findings of one participant of the Framingham Heart Study (FHS) with AD and a frontal lobe meningioma. Methods: T1-weighted MPRAGE magnetic resonance imaging (MRI) scans were acquired on a 1.0 T Seimens scanner one and five years prior to death. Images were processed using FreeSurfer, a software program for volumetric analysis (detailed information is available at <http://www.martinos.org/freesurfer>). Neuropsychological (NP) test batteries consisting of 16 subtests of memory, attention, language, and visuospatial skills were administered at the time of each MRI scan. At autopsy, a comprehensive neuropathological assessment was performed. Results: The first MRI indicated age-related atrophy with small vessel disease. The second MRI demonstrated signs of AD, including enlarged ventricles and deepened cortical sulci exceeding that of normal aging, a frontal lobe meningioma, and some small vessel degenerative changes. The results of post-processing analysis indicated reduced volume consistent with AD. The first NP exam indicated that this participant had mild cognitive impairment (MCI). The second NP exam found the participant to have moderate to severe AD with marked frontal lobe deficits, demonstrating poor performance in tests of abstraction (WAIS Similarities) and set-shifting (Trailmaking Test B) concomitant with decline in tests of immediate and delayed memory, verbal fluency, and naming. Post-mortem neuropathological analysis demonstrated multifocal atherosclerosis in the circle of Willis, a fibroblastic meningioma (3x2x2 cm) in the superior right frontal pole, adenomatous hyperplasia of the pituitary, and AD, Braak stage V. Conclusion: This case study demonstrates how the presence of a co-morbid illness can affect the neuropsychological profile of an AD patient. The presence of a frontal lobe meningioma likely contributed to the decline in frontal lobe task performance over the course of five years. Without the proper neuroimaging, the progression of the cognitive deficits would have been attributed solely to AD, and a potentially reversible contributory lesion would have been missed.

16 * Malissa Kraft (Geriatric Research, Education and Clinical Center, VA Boston Healthcare System), "Pre-surgical Use of the Clock Drawing Test to Predict Intensity of Services Required By Cardiac Patients at the Time of Discharge"

Abstract: Objective: The purpose of this study was to compare pre-surgical cognitive performance, as measured by a brief cognitive screening measure, to surgical variables and measures of surgical outcome as predictors of level of functioning at post-surgical time of discharge. Design: Retrospective database analysis study. Setting: Veterans Affairs medical center in West Roxbury, MA. Participants: One hundred and eleven consecutive subjects undergoing CABG or CABG-Valve surgery at the West Roxbury VA medical center. Measurements: Patients were administered the Clock in a Box (CIB) test 1-2 days prior to CABG or CABG-Valve surgery. Other medical history and surgical procedure data including time on cross clamp and CPB machine, number of days spent in SICU and hospital post-surgery, type of procedure, and number of vessels bypassed was gathered from patient medical records following the surgery. Correlation and regression models were used to analyze the relationship between cognitive function (CIB score), medical history, surgery details (cross clamp time, CPB time), and level of services needed at the time of discharge (home without services, home with a visiting nurse, or to a rehabilitation facility or nursing home). Results: Correlational analyses revealed significant relationships between level of services required postoperatively and CIB score, CPB and cross clamp time, post-operative hospital and SICU days, and age. However, a stepwise regression model revealed that three variables (CPB time, age, and CIB score) were predictive of level of services required at the time of discharge from the hospital. The other medical and surgical variables were not included in the model. Conclusion: The findings suggest that amount of time on CPB machine, age and pre-surgical cognitive performance are associated with a patient's level of independence at time of discharge. These findings indicate that pre-surgical cognitive function, combined with age and CPB time, may be a better predictor of post-surgical level of functioning than variables such as cross clamp time, number of days spent in hospital post-operatively, type of procedure, and number of vessels bypassed. Based on these results, pre-surgical cognitive functioning may be useful in identifying patients likely in need of additional services at the time of discharge following CABG or CABG-Valve surgery, and highlight the importance of considering cognitive performance in cardiac surgery patients.

17 * Kathryn Lombardi (Suffolk University), "Contrast Sensitivity as a Contributor to Motor Dysfunction in Parkinson's Disease"

Abstract: Objective: The purpose of this study was to explore the relationship between contrast sensitivity (CS) and motor functioning in Parkinson's disease (PD), and the effect

of wearing colored lenses on both. It was hypothesized that CS would be significantly correlated with stride length due to improved perception of optic flow parameters, such that yellow lenses would improve CS and stride length (SL). The relationship between blue lenses, CS and SL was also explored. **Participants and Methods:** Twenty-two individuals with PD were recruited for the study, of which three were excluded from analyses due to acuity less than 20/50, measured with a Snellen chart. Nineteen PD patients (Hoehn & Yahr Stages 2-3), mean age = 67.73 years (range 43-90) participated in the study. Mean symptom duration was 9.68 years. CS was measured with the Pelli-Robson chart while wearing no lenses, clear, yellow, and blue Noir Medical Technology lenses (presented in counter-balanced order). Participants were asked to walk with no assistive devices for 10 meters, during two trials for each of four conditions (no lenses, clear, yellow, and blue lenses). **Results:** CS was significantly related to walking speed ($r_s = .580, p < .01$) and SL ($r_s = .516, p < .05$). Yellow tinted lenses did not improve CS, compared to baseline, while blue lenses decreased CS. Mean SL was significantly shorter when wearing blue lenses compared to no lenses. **Conclusion:** CS is significantly related to stride length and walking speed in PD.

18 * Kirsten McLaughlin (Boston University School of Medicine), "A Qualitative Analysis of the Telephone Interview of Cognitive Status"

Abstract: Purpose: Our investigation focused on Serial Seven errors as a subset of the Telephone Interview for Cognitive Status (TICS). Research pertaining to arithmetical operations has shown that tasks requiring varying levels of complexity require processes that take place at different levels of cognitive functioning. We hypothesized that as subtraction of serial seven increased in difficulty and required greater cognitive demand, there would be significant qualitative differences in the errors made when comparing centenarian offspring to age-matched (at least one parent died at average life expectancy of 73) and spousal controls. **Methods:** The Telephone Interview for Cognitive Status (TICS) was administered to 420 offspring and 187 controls. Two additional controls were unable to complete the TICS due to dementia and refusal to complete the test. Mean age of the offspring was 72.5 years (SD 7.2) and for the controls it was 73.1 years (SD 6.9). Offspring had an average of 15.2 years (SD 2.4) of education and controls had 15.2 years (SD 2.3). **Results:** Analysis of the Serial Seven Subtraction task classified errors in to two main categories of error; within 10 and across 10 subtraction errors. 24% of offspring with serial seven errors (7% of all offspring who completed the TICS) were classified as making Within 10 errors compared to 27% of controls with serial seven errors (11% of all controls). Across 10 errors were made by 90% of offspring (27% of all offspring) while 87% of controls (35% of all controls) were classified in this group. Serial Seven errors were broken down in to additional subtypes. Differences between offspring and controls were

found in stimulus pull errors, 10 spot errors, and breaking the 10 errors. 22% of offspring compared to 12% of controls made stimulus pull errors. 15% of offspring and 28% of controls were classified in the 10 spot error group. Lastly, 34% of offspring made breaking the 10 errors in comparison to 46% of controls who demonstrated similar errors. **Conclusions:** In conclusion, this brief cognitive assessment demonstrated that controls had more difficulty than offspring when the subtraction task had multiple steps as was evidenced by the 10 spot errors and breaking the 10 errors.

19 * Nicole McLaughlin (Brown Medical School), "Diffusion Tensor Imaging of the Corpus Callosum: A Cross-Sectional Study Across the Lifespan"

Abstract: Previous studies have demonstrated strong developmental trends of white matter using in vivo neuroimaging. However, few studies have examined white matter using diffusion tensor imaging across the lifespan. In the present study we examined fractional anisotropy and volume in the corpus callosum in 4 groups (children, adolescents, young adults, and elderly). Results revealed a curvilinear relationship in the analysis of the fractional anisotropy values for these four groups, with fractional anisotropy values increasing in childhood and adolescence, reaching their peak in young adulthood, followed by a non-significant decline in the elderly. Volumetric analysis of corpus callosum regions revealed a similar pattern, with an increase in volume from childhood and adolescence through young adulthood, and a non-significant decrease in volume in the elderly group. These results define the microstructural development of the white matter across the lifespan. Future studies are required to examine the neurobehavioral correlates of these neuroimaging indices.

20 * Nicole McLaughlin (Brown Medical School), "Working Memory and the Prefrontal Cortex: A Structural Analysis"

Abstract: Researchers analyzing the frontal lobes have shown structural and functional differences between sub-divisions of the prefrontal cortex (PFC). Specifically, in the field of working memory (WM), there has been a long-standing debate over the functional specialization of the PFC with regard to that function. Researchers such as Goldman-Rakic (2002) have posited the labeled-line model, which assumes the prefrontal cortex is organized in a modality specific fashion, and makes a differentiation between spatial and object WM in the dorsolateral (DLPFC) and ventrolateral prefrontal (VLPFC) cortices, respectively. More recently, Petrides and colleagues (2002) have provided evidence contrary to the labeled-line model of WM. These researchers have developed a two-stage model of WM, stating that the PFC is divided into regions specialized into levels of function, specifically the maintenance and manipulation of information. Maintenance of WM has been localized to the VLPFC, and may be considered a lower-level type of processing; manipulation or

monitoring of information has been localized primarily to the DLPFC, and may be considered a higher-level processing of information. This study proposed an analysis of the relationship between the structures of the VLPFC, the DLPFC, and various measures of WM as an empirical validation of the two-stage model of WM.

21 * Lindsay Miarmi (Suffolk University), “Awareness of the Environment”

Abstract: This experiment investigated the impact of perceptual load on awareness of sensory changes (temperature, sound, light, and smell) in the environment during a simple computer task. Participants completed the Simon Task on a computer screen under both high perceptual load (distractions) and low perceptual load (no distractions) conditions and then filled out questionnaires assessing recall and recognition of environmental changes. Results revealed a statistically significant difference between participants’ reaction times under high and low-load conditions such that the high perceptual load condition yielded slower response times than the low-load condition. However, participants’ ability to detect unexpected sensory changes in their environment during this task was equally poor regardless of perceptual load. Findings are discussed in relation to the construct of Inattentive Blindness and implications for neurologically-impaired individuals with traumatic brain injuries.

22 * Lavinia Pinto (Boston VA Medical Center, Boston University School of Public Health, Boston University School of Medicine), “Structural MRI Findings Correlate with High Symptom Status among Gulf War Veterans”

Abstract: Background: Soldiers deployed to the first GW have persistently reported multiple health symptoms involving the central nervous system. These symptoms have defied neurological diagnosis. In order to assign a symptom-based diagnosis to GW veterans with persisting health complaints, Centers for Disease Control developed criteria for a syndrome termed “chronic multisymptom illness” (CMI). CMI determination is based on three self-reported health symptom clusters, including fatigue, mood and cognition, and musculoskeletal complaints as reported on the Health Symptom Checklist questionnaire (HSC). This study was designed to determine whether structural brain differences in a GW veteran population are evident on MRI and to relate MRI findings to current health symptom reporting. Design/Methods: Thirty-six GW veterans (18 meeting criteria for CMI, 18 non-CMI) underwent a brief cognitive screen, structural MR imaging, clinical interview and the HSC. A MPRAGE MRI sequence was acquired from each subject and analyzed with Freesurfer. Results: MANOVA analysis of the MRI data revealed significantly smaller volumes of the rostral anterior cingulate gyrus, entorhinal gyrus, inferior parietal and inferior temporal gyri, lateral orbitofrontal, supramarginal gyrus and overall cortex ($p < 0.01$) in the CMI group. Linear regression

showed that the rostral anterior cingulate, inferior parietal and overall cortex volumes were each inversely related to total number of health symptoms on the HSC ($p < 0.01$). In order to control for multiple comparisons, $p < .01$ was considered significant. Conclusions: These findings suggest that GW veterans meeting self-report criteria for CMI showed structural brain differences on objective MRI imaging compared with CMI negative veterans. Total number of self-reported health symptoms was also related to brain volumetrics in a linear fashion. These findings, although preliminary, suggest that the self-reported total health symptoms may be an indicator of structural brain differences in high-symptom GW veterans compared to those with few symptoms. The etiology of the MRI differences between CMI positive and negative groups is unclear. It is hypothesized that they may be related to neurochemical exposures experienced during the GW.

23 Amir Poreh (Cleveland State University), “Quantified Process Scoring of the Five Point Test”

Abstract: Nonverbal fluency tasks are of great importance in elucidating nonverbal executive function deficits. Existing measures, however, do not quantitatively document test taking strategies. One way to overcome this limitation is to use modern information technology. This is achieved by having the final output inserted into a software program such that the examiner clicks on buttons that correspond to the five dots that make each design*. Prior to the study it was hypothesized that subjects would use three types of strategies to increase their output – adding elements, subtracting elements, and the use of rotations. Regression analyses, with the dependent measure being the final output and the independent variables being the three aforementioned strategies showed that only the rotation strategy significantly predicted the final output ($R^2 = .35$). Additional analysis showed that the Five Point Test significantly correlated with quantified complex figure copying strategies.

24 Amir Poreh (Cleveland State University), “Quantified Process Scoring of the Trail Making Test”

Abstract: The TMT is one of the most widely used neuropsychological measures. The present study employed software to record the latency of each move the examinee made from one element to the next by having the examiner click on buttons that are laid-out on a computer screen*. The software breaks the 25 elements of the test into 5 sections of 5 elements each. The test was administered to a random sample of 120 adults (ages 18 to 63). Internal consistency analyses showed that the computer based scoring method was moderately reliable for Part A (Cronbach’s Alpha = .78) and highly reliable for Part B (Cronbach’s alpha = .84). Factorial analysis produced a two factor solution. Factor 1 can be described as Focused Attention and Factor 2 as Divided Attention. The first 4 sections of Trails A load on Factor 1 only and the last section (5 elements) load on both Factor 1 and 2. In con-

trast, the first section of Trails B loads on Factor 1 while the remainder of the test loads on Factor 2. Curve fitting shows that the Trails A Total Score is best described by a linear regression ($R^2=0.88$), whereas the Trails B total score is best described by an exponential regression ($R^2=0.95$). Similar findings using multiple samples from the literature will be described.

25 * Steve Schettler (Boston University School of Medicine), "Effects of Bilateral Hippocampal Lesions on the Performance of an Adaptation of the Wisconsin Card Sorting Task in the Rhesus Monkey"

Abstract: As part of our studies examining the interaction between the prefrontal cortex and the medial temporal lobe in the rhesus macaque (*macaca mulatta*), we assessed a group of monkeys ($n=4$) with bilateral electrolytic lesions of the hippocampal formation on the Conceptual Set Shifting Task (CSST) (Moore et al. 2005). This task is an adaptation of the Wisconsin Card Sorting Task (WCST), the most commonly used instrument in the neuropsychological literature for assessing executive function, assumed to have its neurobiological locus in the prefrontal cortices. However, there are inconsistent results in the literature as to whether the WCST actually depends on the frontal lobe for successful performance, as some investigators have noted impaired performance in patients with medial temporal lobe pathology. Here we report that, in contrast to intact controls, monkeys with bilateral lesions of the hippocampal formation show significant impairment on specific components of the CSST. Monkeys in the hippocampal group were impaired on measures of set shifting ($p = 0.015$) and demonstrated a trend towards significance on measures of perseveration ($p = 0.056$), and abstraction ($p = 0.053$). These results suggest that successful performance on the CSST, and by extension the WCST, may not be wholly dependent on the integrity of the prefrontal cortices and that the hippocampal formation may play an important role in executive functions.

26 Manuel Sedo (Multilingual Testing, Natick, MA), "Multipart Models (M.P.M.) Produce Visual Segmentations and Verbal Confabulations (Test of Alternative Processing of Spatial Images, "T.A.P.S.I.")"

Abstract: "Multipart models" (M.P.M.) are unusually confusing to subjects who cannot perceive whole images (right hemisphere dysfunctions, absence of transient macrocellular images in dyslexia, inability to use the "upper occipito-parietal visual-motor channel" (the "how" or "where" channel); or to those subjects who use the slower occipito-temporal channel (the semantic "what" channel) to build "verbal analogs" of the model with little or no spatial support, and "giving themselves verbal directions for its reproduction" (Koppitz). We administered the T.A.P.S.I.: an experimental sequence of MPMs, to 20 8th-graders; and both the T.A.P.S.I. and the Beery Test of Visual-Motor Alternation were administered to 50 elemen-

tary students (ages 5 to 10) referred for special education evaluation. T.A.P.S.I. correlated .65 and .62 with grades in English and in Math; and .93 with Social Studies. V.M.I. and T.A.P.S.I. correlated .75; and MPMs triggered a large number of spatial "fragmentations" and verbal "confabulations", even in the models for the lowest ages. The answers obtained suggest that in some subjects "language is an organ of perception much more than a means of communication" (Jaynes), and that a test exploring this kind of alternative processing may offer important insights about the alternative ways of processing spatial-motor-conceptual information described by Mishkin & Ungerleider in 1982 and by Paivio in 1986.

27 Manuel Sedo (Multilingual Testing, Natick, MA), "Repetition of Equal Length Sentences at Three Different Levels of Syntactic Complexity"

Abstract: In Spanish it is entirely possible to build sentences of increasing syllabic "length" (2-2-4-4-6-6-8-8 etc) by using the bisyllabic word as a constant module, as Kagan & Klein did in Guatemala. It is also possible to compare these "modular" sentences to sentences of an identical length meant to emphasize syntactic "complexity" through the use of sentences of exactly the same length which present all kinds of morphological and syntactic markers (gender and number markers, negatives, interrogations, prepositional forms, verb tenses and persons, composite verbs, relative clauses, etc). Since the subjects can only repeat the sentences they can actually build, they will distort or reject or fail to repeat the complex sentences beyond their own level of linguistic maturity. The test was adapted for its use in Chile. We administered the two series to groups of children in the ages 6, 9 and 12; and we added a third part (repeating syntactically non-sensical sentences) matching identical sentence length. The test was extremely reliable in all groups, ages, levels, genders and subtests (level: .001***). At the successive age levels, student increase their performance at the three series of sentences. We did not find this time the facilitation in the repetition of complex sentences, that we had previously found in very gifted adolescent populations. The three series of sentences show value as descriptors of the increasing linguistic maturity of the subjects. Complexity was handled by the child as one more level of difficulty, up to the age of 12, at which age length and complexity rewached identical levels, and the subjects was not overloaded at all by the level of complexity. The score $L - C$ (length minus complexity) can be used as an ipsative measure of the diminishing gap in linguistic maturity.

28 * Elizabeth Steffen (Geriatric Research, Education and Clinical Center, VA Boston Healthcare System), "Differential eyeblink learning in delay but not trace discrimination/reversal task in abstinent alcoholics"

Abstract: It is known that chronic alcoholism has a profound effect on the brain, including structural alterations in

the cerebellum, a structure that is both necessary and sufficient for all forms of classical eyeblink conditioning. Indeed, we have documented impaired and even absent acquisition of conditioned responses in abstinent amnesic (Korsakoff's patients) and non-amnesic alcoholics. Additionally, there is abundant evidence indicating that the structural alterations due to alcohol extend into prefrontal cortex and frontal circuitry. These are areas of the brain known to be essential for more complex or nonoptimal forms of EBCC. The current study challenged abstinent alcoholics using two relatively complex learning tasks (delay discrimination/reversal and trace discrimination/reversal) in order to push the limits of their abilities and to reveal behaviorally what would likely reflect neuropathological damage to frontal and frontal subcortical structures. Two groups of abstinent alcoholics were recruited, 21 participated in the delay task and 18 participated in the trace task, and the two groups were matched with regard to age, education, and drinking history. During discrimination, one tone (CS+) randomly predicted the occurrence of an air-puff (US) (30 trials), while another tone (CS-) (30 trials) was presented without the US. During reversal, the significance of the tones switch and another 60 trials commenced. For delay discrimination the 100 ms airpuff US coterminated with the 1350 ms CS+, while for trace discrimination a 1000 ms silent trace period occurred between the 250 ms CS+ and the US. Difference scores were calculated by subtracting the percentage of conditioned responses (CR's) during CS- trials from the percentage of CR's during CS+ trials for the discrimination and reversal phases of each task. Comparisons revealed a significant difference between delay and trace conditioning during the reversal phase ($t(37)=2.05, p<0.05$). The difference score between the two tasks for the discrimination phase approached significance ($p<0.07$). These data support the notion that alcoholics are increasingly impaired in the complex task of reversing a previously learned discrimination when a silent trace interval is introduced. The inability to reverse a learned discrimination, especially in the context of a trace paradigm, is likely to result from neuropathological changes to forebrain structures. The inability of alcoholics to flexibly alter learned associations may be central to their continued addiction and the magnitude of the impairment may be predictive of relapse incidence.

29 * Mary Valmas (The Vision and Cognition Laboratory, Boston University), "Numerical Cognition in PD: the spatial representation of numerical distance"

Abstract: Deficits in number processing and visuospatial function in Parkinson's disease (PD) presumably arise from changes in the cortico-striato-thalamic circuit that includes the basal ganglia and their cortical projection areas, the dorsolateral prefrontal cortex and the posterior parietal lobes. We examined the nature of number processing and its relation to visuospatial function in PD, and investigated the effects of side of onset upon the spatial representation of number. We

assessed 18 patients with PD and 26 normal control volunteers (NC) on a series of number processing and neuropsychological tests. The PD participants were significantly more impaired than NC on number processing measures (mental number manipulation, visual number processing, and spatial number orientation) and on visuospatial processing tasks. The PD group performance on mental manipulation of the numerical distance (mental number bisection) correlated significantly with performance on the task of visual manipulation of numerical distance (number-line orientation) and visuospatial attention and working memory (spatial span). Similarly, PD performance on the mental manipulation of the numerals task (number transcoding) correlated significantly with visuospatial processing tasks such as line bisection. The pattern of PD performance was significantly different for right-side onset (RPD) vs. left-side onset (LPD) subgroups, reflecting greater left vs. right hemisphere involvement, respectively. LPD underestimated the numerical distance on the horizontal number line and demonstrated a similar effect on the mental number transcoding task, having significantly more missing digits. These findings suggest that the right hemisphere involvement that typically affects visuospatial functioning has similar effect on numerical cognition. By contrast, RPD had significantly more errors than NC on number transcoding and serial counting, suggesting a left hemisphere involvement effect on verbal aspects of number processing. Our findings indicate that side of PD onset may produce specific representational deficits in number processing. Spatial impairment in number processing in PD patients is consistent with a close functional relation between the representation of numerical quantity and visuospatial processes mediated by right parietal cortex.

30 * Jonathan Venne (Geriatric Research, Education and Clinical Center, VA Boston Healthcare System), "On-Line Versus Questionnaire Assessment of Awareness During Classically Conditioned Delay Discrimination & Reversal"

Abstract: The issue of whether or not awareness of stimulus contingencies is necessary to acquire conditioned responses during classical eyeblink conditioning is currently a topic of debate. One position asserts that the critical factor relates to the paradigm; delay conditioning is a procedural learning task that does not require awareness whereas trace conditioning is a declarative task that does require awareness (e.g., Clark & Squire, 1998). A second position asserts that the critical factor is task difficulty; single-cue conditioning does not require awareness whereas more difficult two-cue discrimination tasks do require awareness (e.g., Disterhoft, et al., 2002). A main source of variability in past studies that assess this issue is how awareness was measured and defined; typically by a post-experimental questionnaire whereby awareness was determined by the number of correctly answered questions about the stimulus contingency. The current experiment sought to

create a more accurate method of measuring of awareness that would be more sensitive to learning as it occurred “on-line” without directing attention to the relationship between the unconditioned stimulus (US) and the conditioned stimulus (CS). Participants included 11 alcoholics and 6 control participants. Each performed a discrimination and reversal eyeblink conditioning task. During the discrimination phase a CS+ tone was presented for 750 ms and coterminated with a 100 ms airpuff, and an unpaired CS- tone was presented for 750 ms. During the reversal phase the significance of the tones switched. Throughout the course of the experiment participants viewed a computer monitor that instructed them to press a button when they thought they were going to be presented with an airpuff. After the reversal phase, participants completed a traditional post-experiment awareness questionnaire. The questionnaire data from the discrimination phase replicates past studies, indicating that awareness is necessary for a delay discrimination task, however the reversal data contradict this and would seem to suggest that as the task becomes more difficult, unaware participants begin to learn. In contrast, the data from the on-line measure of awareness appears to represent a slowed but relatively consistent pattern of differential learning across block. This is especially true in the more difficult reversal phase. We conclude, therefore, that the online measure is a more accurate reflection of the relationship between awareness and differential learning.

31 * Svenja Wacker (Cambridge Health Alliance), “Assessment of Early Neuropsychological Dysfunction in Multicultural Patients with HIV/AIDS”

Abstract: This study aimed at a) designing a brief and relatively culture-fair battery of neuropsychological measures sensitive to capturing early cognitive sequelae of HIV/AIDS, and b) investigating the impact of culture and language on neuropsychological test performance in a group of ethnically diverse patients with HIV/AIDS. Many studies are published on cognitive functioning of white homosexual/bisexual men and intravenous drug users with HIV, but effects of demographic factors, such as race, gender, socioeconomic level, country of origin, etc. have not been extensively explored. A complicating factor in the investigation of neuropsychological functioning in an ethnically diverse sample is the question of validity of traditional neuropsychological tools with individuals with language and cultural barriers. Study participants were recruited from the Cambridge Health Alliance Zinberg Clinic, a multidisciplinary AIDS program. Subjects completed a number of relatively “culture-fair” neuropsychological measures across the domains of attention, processing speed, reasoning, fine motor functioning, and mood. Analyses were conducted on a group of 37 patients with HIV seropositive status, consisting of men and women from the US and various European, African, and South/Central American countries. Among nonnative English speakers, some participants elected to receive assistance from professional medical interpreters during the interview

and assessment, while others had sufficient English proficiency to undergo the evaluation in English, without interpreters. Means comparisons between native and nonnative patient groups revealed that the selected measures of mood, estimated IQ, and psychomotor speed/attention were sensitive in capturing functional status of individuals with HIV/AIDS. Measures of psychomotor speed, however, often considered a gold standard when assessing functional status in HIV, were less sensitive to decline with this sample. Nonetheless, subtle (but significant) differences in task performance were found among immigrant groups. Thus results from these measures should be interpreted with caution when obtained from immigrant patients in a clinical context.

32 * Joanne Wojcik (Commonwealth Research Center at the Mass. Mental Health Center Beth Israel Deaconess Medical Center Dept of Psychiatry, Boston College), Duration of Untreated Psychosis: Initial Characterization and Cognitive Correlates in a Sample of Patients with a First-Episode of Schizophrenia Spectrum Disorder”

Abstract: This preliminary study investigated the relationship of duration of untreated psychosis (DUP) in a sample of patients with first episode schizophrenia, and found that the relationship was generally not supported except for one minor exception. The cognitive functioning of this sample was also examined, and was characterized by relative weaknesses in several domains.

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