**UNITED STATES DISTRICT COURT**
**EASTERN DISTRICT OF PENNSYLVANIA**

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| IN RE: NATIONAL FOOTBALL LEAGUE PLAYERS' CONCUSSION INJURY LITIGATION | No. 2:12-md-02323-AB<br>MDL No. 2323 |
| Kevin Turner and Shawn Wooden, *on behalf of themselves and others similarly situated*,<br><br>Plaintiffs,<br><br>v.<br><br>National Football League and NFL Properties, LLC, successor-in-interest to NFL Properties, Inc.,<br><br>Defendants. | Civil Action No. 2:14-cv-00029-AB |
| THIS DOCUMENT RELATES TO: ALL ACTIONS | |

**DECLARATION OF ROBERT A. STERN, PH.D.**

Robert A. Stern, Ph.D., affirms under penalty of perjury the truth of the following facts:

1. I am a Professor of Neurology, Neurosurgery, and Anatomy & Neurobiology at Boston University School of Medicine. My complete *curriculum vitae* is attached at Tab A, and I highlight here some of my experience, research, and qualifications relevant to the opinions expressed below.

2. I am a licensed Clinical Psychologist (Massachusetts License number 7238), with a specialty in Clinical Neuropsychology. I have been licensed as a Clinical Psychologist since 1990 and have been a Registrant of the National Register of Health Service Providers in Psychology since 1992. During that time, I was Director of the Memory and Cognitive Assessment Program at Rhode Island Hospital.

3. Prior to that, I had been Assistant Professor of Psychiatry at the University of North Carolina (UNC) School of Medicine at Chapel Hill, North Carolina, where I had been on the faculty since 1990. During that time, I was Director of the Neurobehavioral Assessment Laboratory as well as the Associate Director of the federally-funded Mental Health Clinical Research Center.

4. I received my Ph.D. in Clinical Psychology from the University of Rhode Island (dissertation titled, "Mood Disorders following Stroke"), completed my pre-doctoral internship training in Clinical Neuropsychology at the Boston Veterans Administration Medical Center, and completed my post-doctoral fellowship research and clinical training in both Neuropsychology and Psychoneuroendocrinology at UNC School of Medicine.

5. I am a Fellow of both the American Neuropsychiatric Association and the National Academy of Neuropsychology. I sit on the editorial boards of several leading medical and scientific journals, and on the grant review committees of several international, national (e.g., National Institutes of Health, NIH), and foundation funding agencies. I am a member of the medical and scientific advisory boards of the MA/NH Chapter of the Alzheimer's Association, the National Grave's Disease Foundation, and Sports Legacy Institute, and am also a member of the Mackey White Traumatic Brain Injury Committee of the National Football League Players Association.

6. Throughout my 25 year career, I have taught medical students and young physicians (neurology residents, psychiatry residents, and geriatrics fellows) through courses and required training seminars in the areas of neurobehavioral mental status examination, brain-behavior relationships, assessment of dementia, the diagnosis and treatment of Alzheimer's disease and related disorders, chronic traumatic encephalopathy (CTE), and similar areas of their formal training.

7. I have been a lecturer in, and a course director of, several continuing medical education (CME) courses for physicians, both locally and nationally.

8. I have been an invited lecturer (and keynote lecturer) for numerous national and international medical and scientific meetings, speaking primarily in the area of Alzheimer's disease, CTE, and issues pertaining to the evaluation and assessment of the cognitive, mood, and behavioral aspects of neurodegenerative disease.

9. I have also been the mentor for numerous undergraduate students, graduate students (Ph.D. students, master's degree students, medical students, M.D./Ph.D. students), and post-doctoral fellows, and have been the primary mentor of many masters theses and Ph.D. dissertations.

10. One of my areas of specialization and expertise includes the assessment and evaluation of neurocognitive functioning. I have published extensively in this area and have also been the primary author of several widely used, standardized neuropsychological tests, including the 33 tests of memory, language, attention, executive functioning, and spatial skills that make up the *Neuropsychological Assessment Battery* (NAB).

11. I have directed predoctoral and postdoctoral training programs in Clinical Neuropsychology, and have served as the mentor for numerous trainees learning to become neuropsychologists.

12. I have given invited lectures at the New York Academy of Sciences and for the Coalition Against Major Diseases in Washington, DC, providing guidance and education to members of the Federal Drug Administration, senior thought leaders in the pharmaceutical industry, and fellow scientists about neurocognitive assessment issues for Alzheimer's disease clinical trials.

13. As a clinical neuropsychologist with a specialty in the evaluation and diagnosis of neurodegenerative diseases, I conduct clinical examinations of patients referred to me by neurologists, geriatricians, psychiatrists, primary care physicians, and others, for diagnostic impressions and treatment recommendations.

14. My clinical neuroscience research focuses on the risk factors for, and the diagnosis and treatment of, neurodegenerative diseases and other causes of cognitive, mood, and behavior change in aging. Currently, I am the Clinical Core Director of the Boston University (BU) Alzheimer's Disease Center (ADC), one of 27 research centers across the country funded by the National Institute on Aging (NIA) of the National Institutes of Health (NIH). In this capacity, I oversee all clinical research (i.e., research conducted on living humans) pertaining to Alzheimer's disease, including studies aimed at the early diagnosis of Alzheimer's disease, genetics, and clinical trials of new medicines to prevent or treat Alzheimer's disease.

15. As part of my role as Clinical Core Director of the BU ADC, I oversee a weekly multidisciplinary diagnostic consensus conference involving neurologists, neuropsychologists, psychiatrists, geriatricians, and others, at which we review the histories, medical tests (including neuroimaging), clinical evaluations, and neuropsychological test performance of research participants and determine the specific

diagnosis (e.g., Alzheimer's disease dementia, Frontotemporal Dementia, Vascular Dementia, Mild Cognitive Impairment, Chronic Traumatic Encephalopathy) of each individual.

16. My other area of currently NIH-funded research includes the cognitive effects of chemotherapy in older breast cancer patients; my co-principal investigators on this grant are from the Georgetown Lombardi Comprehensive Cancer Center and the Memorial Sloan Kettering Cancer Center.

17. Since 2008, my primary area of research has been the long-term consequences of repetitive brain trauma in athletes (see listing of publications below). I was a co-founder of the BU Center for the Study of Traumatic Encephalopathy (CSTE, now "CTE Center") and I serve as the leader of clinical research for the CTE Center. I have received R01 grant funding from NIH (the first grant ever funded by NIH for the study of CTE) to develop biomarkers for the *in vivo* (i.e., during life) detection and diagnosis of CTE.

18. This project, called the Diagnosis and Evaluation of Traumatic Encephalopathy using Clinical Tests (DETECT) study, involves the examination of 100 former professional football players (selected based on positions played, their overall exposure to repetitive brain trauma using data from helmet sensors, and existing clinical symptoms) and 50 same-age non-contact sport elite athletes. All research participants (approximately 100 to date) undergo extensive brain scans, lumbar punctures (to measure proteins in cerebrospinal fluid), electrophysiological studies, blood tests (e.g., for genetic studies and other state-of-the-art biomarkers), and in-depth neurological, neuropsychological, and psychiatric evaluations. For this project, I oversee a talented multidisciplinary group of investigators with specialties in neurology, psychiatry, neuroimaging, radiology, genetics, and biostatistics.

19. In addition, I have recently received Department of Defense funding (with my co-principal investigator, Dr. Martha Shenton from Harvard Medical School) to examine a new Positron Emission Tomography (PET) ligand (T807) that is specific to the abnormal forms of tau protein found in CTE.

20. Relatedly, I am principal investigator of a new study funded by Avid Radiopharmaceuticals to examine that same PET ligand (and another PET ligand for the amyloid protein found in AD) in participants in the DETECT study. I view these two studies of the T807 PET test as the most important investigations in the field of CTE research.

21. I am also the principal investigator of a telephone- and web-based longitudinal study (Longitudinal Evaluation to Gather Evidence of Neurodegenerative Disease; LEGEND) of over 600 adult former and current athletes across all sports and levels of play (including collegiate) to assess risk factors (including brain trauma exposure, genetics, and lifestyle) and clinical course of CTE and other short-term and long-term consequences of repetitive brain trauma.

22. I have conducted over 100 in-depth retrospective clinical interviews with the next-of-kin of the deceased athletes (and others) in Dr. Ann McKee's VA-BU-SLI brain bank. For these cases, I also reviewed all of the available medical records. I currently am a co-investigator of Dr. McKee's NIH-funded U01 project aimed at defining the neuropathology of CTE. For that study, I am a member of the multidisciplinary group of clinicians and scientists who review the clinical history of every new case in the brain bank in order to determine the clinical diagnosis prior to being provided with the neuropathological diagnosis for the case.

23. Based on these experiences, I am confident that I have the same or more experience than any other scientist or clinician in the world examining the clinical history and presentation of athletes (including former NFL players) with post-mortem diagnosed CTE, through detailed interviews and discussions with the decedents' family members, friends, significant others, and physicians.

24. Based on the data gathered through these interviews and medical records, I have published (as first or second author) the largest case series of the clinical presentation of neuropathologically-confirmed CTE (Stern et al., 2013; McKee, Stern, et al., 2013).

25. I am the senior author of an important new journal article (Montenigro et al., 2014) that describes the first clinical diagnostic criteria for CTE and Traumatic Encephalopathy Syndrome (TES), based, in part, on the information gathered from the post-mortem family interviews of over 75 neuropathologically confirmed cases of CTE, and on an extensive review of the world's literature on CTE and "dementia pugilistica."

26. Our group of researchers at BU has been playing a central role nationally and internationally in the area of CTE and the long-term consequences of repetitive brain trauma, including concussions and subconcussive blows. I was the co-director of the first ever national scientific meeting on CTE and have been an invited speaker at numerous national and international conferences, including the first two workshops held

by NIH on this topic. I have published extensively in this area of research including several empirical papers in high impact peer-reviewed scientific journals. I am the invited editor of a special series on CTE and traumatic brain injury (TBI) for the journal, *Alzheimer's Research and Therapy*. I recently testified about this issue before the US Senate Special Committee on Aging.

27. My experience has included extensive clinical- and research-based interviews with former professional football players and their relatives regarding the mid to late life changes in cognition, behavior, mood and daily functioning observed in these persons.

28. My statements and views included in this declaration are mine alone and do not reflect those of Boston University or any of the departments and centers with which I am involved. Specifically, they do not reflect the views of the Boston University Alzheimer's Disease Center, the Boston University CTE Center, or the Boston University Center for the Study of Traumatic Encephalopathy; nor do they reflect any of the faculty, staff, or administration associated with any of these organizations.

29. I have not received any financial payments for preparing this Declaration from any source, including any attorney or plaintiff in this case. Furthermore, I am not retained by, nor receive any payments from plaintiff attorneys in this case for the purpose of this case.

## I. CLASS MEMBERS WHO SUFFER FROM MANY OF THE MOST DISTURBING AND DISABLING SYMPTOMS OF CTE WOULD NOT BE COMPENSATED UNDER THE SETTLEMENT

30. I have reviewed the Class Action Settlement Agreement as of June 25, 2014, together with its exhibits (the "Settlement"), filed in the above captioned proceeding. I have paid particular attention to Articles III through IX, and Exhibits 1, 2, and 3, of the Settlement, relating to testing and compensation of the class of retired NFL football players and their families.

31. The primary clinical features of CTE include impaired cognition, mood, and behavior (e.g., Stern et al., 2013). However, the Baseline Neuropsychological Test Battery set forth in Exhibit 2 of the Settlement (the "Test Battery") is focused primarily on the assessment of cognitive impairment, and excludes problems in mood and behavior in the algorithm used to define Neurocognitive Impairment Levels 1, 1.5, or 2.

32. The behavioral and mood disorders associated with head impacts in former professional football players are just as important, just as serious, and just as amenable to detection and diagnosis, as cognitive disorders. Individuals with neuropathologically confirmed CTE have had significant problems with mood and behavior and not just problems with cognition. In the study from my research team (Stern et al., 2013) published in the journal, Neurology, 22 of 33 deceased former athletes with neuropathologically confirmed CTE (and no other abnormal brain findings) were reported to have behavior or mood problems as their initial difficulties, prior to any cognitive impairment. Only 10 of 33 were ever diagnosed with dementia at any time prior to death. These numbers are provided not as an estimate of expected future diagnoses or as an estimate of the prevalence of dementia amongst all individuals with CTE. Rather, they are presented to underscore the findings from our group and from all other descriptions of CTE that dementia and cognitive impairment are not the only life-altering problems experienced by individuals with CTE.

33. Individuals with impairments in mood and behavior, but without significant cognitive impairment can still experience devastating changes in their lives. Based on my review of the medical and scientific literature and on my interviews of living research participants, informal discussions with former players and/or their family members, and formal interviews with family members of deceased former players with neuropathologically confirmed CTE, it is my scientific opinion that many former NFL players have significant changes in mood and behavior (e.g., depression, hopelessness, impulsivity, explosiveness, rage, aggression), resulting, in part, from their repetitive head impacts in the NFL, that have, in turn, led to significant financial, personal, and medical changes, including, but not limited to: the inability to maintain employment, homelessness, social isolation, domestic abuse, divorce, substance abuse, excessive gambling, poor financial decision-making, and death from accidental drug overdose or suicide.

34. The significant changes in mood and behavior relatively early in life can lead to significant distress for the individual with CTE as well as their family, friends, and other loved ones. I have learned about the tremendous pain and suffering the family members experienced while their loved one's life was destroyed by the progressive destruction of the brain. I have interviewed the adult children of former professional and college football and rugby players whose fathers had dramatic changes in personality, the development of

aggressive and out-of-control behavior, and suicidal thoughts. And, I have spoken with the parents of young athletes in their 20's and 30's who impulsively took their own lives.

35. Several well-known former NFL players who were diagnosed neuropathologically with CTE following death did not have dementia and would not have been found impaired under the proposed Baseline Assessment Program of the Settlement (the "BAP"). For example, based on publicly available information, Junior Seau (diagnosed with CTE by a group of independent neuropathologists coordinated by the NIH), and Dave Duerson (diagnosed with CTE by Dr. McKee at BU), both died from suicide reportedly after years of significant changes in mood and behavior, including depression, hopelessness, aggression, and poor impulse control. Based on public reports of their functioning by their family members and friends, it is unlikely that their cognitive skills were impaired to the degree of meeting the criteria for Level 1.5 or Level 2 Neurocognitive Impairment. Rather, their primary symptoms involved mood and behavioral disturbance, neither of which is compensable in the Settlement. Notwithstanding important limitations and criticisms of the test battery and criteria described below, Level 1.5 and Level 2 Neurocognitive Impairment do not include any impairment in mood or behavior. Thus if either of these individuals died on July 8, 2014 or later, their families would not receive any compensation under the Settlement.

36. CTE is a unique neurodegenerative disease. It is not Alzheimer's disease (AD), Parkinson's disease, or ALS. All of these diseases are diagnosed through careful neuropathological examination of brain tissue following death.

37. AD cannot accurately be diagnosed during life, although there have been tremendous strides over the past decade in developing specific, objective biological markers (biomarkers) that improve the predictive accuracy of the diagnosis during life. These biomarkers are now used routinely in research studies and are beginning to be used in clinical settings.

38. CTE also cannot accurately be diagnosed during life, although there are methods being developed at this time by my research team and by others that are meant to improve our ability to do so and to distinguish CTE from AD and other brain diseases and conditions. Based on the scientific and medical literature, my own first-hand knowledge of the current state of the scientific field, and on my own research, I am

confident that within the next five to ten years there will be highly accurate, clinically accepted, and FDA-approved methods to diagnose CTE during life. Based on my involvement in, and understanding of, current ongoing research, it is my scientific opinion that the understanding of neurodegenerative conditions and the capabilities of diagnostic tests will advance rapidly over the next 65 years.

39. Dementia is not an illness or disease. Dementia is a clinical syndrome diagnosed when there are cognitive symptoms that interfere with the ability to function at work or at usual activities, and the patient exhibits a decline from previous levels of functioning that is not explained by delirium or major psychiatric disorder (McKhann et al., 2011; National Institute on Aging and the Alzheimer's Association workgroup).

40. There are several neurodegenerative diseases that can lead to dementia. AD, CTE, and Parkinson's all are neurodegenerative diseases that can lead to dementia. These diseases begin many years or decades prior to any symptoms. When enough brain tissue is destroyed by the disease, symptoms begin to develop. When the symptoms begin, they would not be considered "dementia." When there are cognitive impairments, but not to the degree of interfering with daily functioning, the clinical syndrome of Mild Cognitive Impairment (MCI) may be diagnosed; MCI is not a disease, it is merely a clinical syndrome. It is only when these diseases progress further and the symptoms become bad enough to interfere with the ability to function independently that the individual would be diagnosed with dementia. That is, AD, CTE, and Parkinson's disease each are independent brain diseases that eventually can lead to dementia, later in the course of the disease.

41. The only symptoms related to CTE that are compensable (other than those that overlap with Alzheimer's disease, ALS or Parkinson's) are cognitive difficulties, and only cognitive difficulties that are severe enough that the Class Member would have significant impairments in critical aspects of daily living and independence. Several key symptoms of CTE that are identified in the scientific and medical literature and in my clinical and research experience are not compensable.

42. Class members who clearly have dementia but whose doctors have determined, by appropriate and currently approved medical tests, that they likely have CTE and not Alzheimer's disease as the cause of the dementia would receive substantially less compensation than Class members whose doctors do not order the

tests to assist in the diagnosis. At this time, there are two U.S. Food and Drug Administration (FDA)-approved PET scan tests for patients being evaluated for Alzheimer's disease and dementia: Amyvid (Florbetapir F 18 injection) and Vizamyl (flutemetamol F 18 injection). The following is from an FDA Press Release dated October 25, 2013: "'Many Americans are evaluated every year to determine the cause of diminishing neurologic functions, such as memory and judgment, that raise the possibility of Alzheimer's disease,' said Shaw Chen, M.D., deputy director of the Office of Drug Evaluation IV in the FDA's Center for Drug Evaluation and Research. 'Imaging drugs like Vizamyl provide physicians with important tools to help evaluate patients for AD and dementia…A negative Vizamyl scan means that there is little or no beta amyloid accumulation in the brain and the cause of the dementia is probably not due to AD.'"

As an exemplar, I will compare two hypothetical cases, both age 62 with the same number of qualifying seasons in the NFL. They both have had a progressive history of cognitive, behavioral, and mood symptoms and are now having difficulties carrying out daily activities. They receive the exact same test scores on the Neuropsychological Test Battery and meet the criteria for Neurocognitive Impairment 1.5. They are examined by two different neurologists. Both neurologists conduct neurological evaluations, order the blood tests, and order the same MRI scans. The findings of all these tests come back similarly negative. Both cases are diagnosed by their neurologists as having "dementia." However, Case A's neurologist diagnoses him with Alzheimer's disease. Case B's neurologist decides to order a Florbetapir (Amyvid) PET scan. That specific FDA-approved test is labeled by the FDA to be used to help rule out Alzheimer's disease in cases when the differential diagnosis may be questionable. That is, if the test is found to be negative (indicating little or no abnormal beta amyloid protein build up in the brain), the patient unlikely has Alzheimer's disease as the cause of their dementia. For Case B, because the neurologist knew that CTE was a possible cause for dementia in an individual with a history of repetitive brain trauma, the neurologist felt that the Florbetapir PET scan would be helpful in clarifying the diagnosis. The result of the scan came back negative, resulting in the neurologist determining that the patient does not have Alzheimer's disease. Case A, with a diagnosis of Alzheimer's disease as the cause of dementia, would be eligible for compensation of $950,000 according to the Settlement's Monetary Award Grid. Case B, with a diagnosis of Probable CTE as the cause of dementia (the neurologist

could not give a diagnosis of Alzheimer's based on the negative Florbetapir scan), would not be covered for anything other than Neurocognitive Impairment Level 1.5 and would be eligible for compensation of $290,000. That is, two individuals with identical histories and clinical presentations would receive strikingly disparate compensation solely because of the decision of one of the neurologists to use a very appropriate, FDA-approved test to make a more accurate diagnosis (i.e., not Alzheimer's disease). The former NFL player who received that accurate diagnosis would receive $660,000 less than the former NFL player with the imprecise/incomplete diagnosis.

## II. THE BASELINE NEUROPSYCHOLOGICAL TEST BATTERY IS INAPPROPRIATE FOR THE EVALUATION OF THE CLASS MEMBERS FOR WHOM IT IS MEANT TO BE USED

43. The Test Battery, set forth in Exhibit 2 of the Settlement, is not appropriate for evaluating whether retired professional football players have neurodegenerative diseases such as CTE or Alzheimer's disease. Rather, it is appropriate only for the evaluation of a younger traumatic brain injury patient. The specific tests selected, and the length of the battery would not be consistent with that given by the large majority of neuropsychologists who specialize in neurodegenerative disease and who evaluate patients for Mild Cognitive Impairment and Alzheimer's disease dementia.

44. Based on information provided by the test publishers and by my extensive clinical experience with dementia patients, it is estimated that the Test Battery in the Settlement would take approximately five hours without any break. For patients with the level of severity required for compensation (i.e., Level 1.5 or 2 Neurocognitive Impairment), this length of testing would be excessive, would result in refusals to complete the evaluation, and would result in inaccurate results.

45. The Test Battery includes two measures of "Mental Health" even though the results of those tests are not included anywhere in the criteria for impairment. In addition, based on the scientific and medical literature and on my clinical and research experience, the two tests are not appropriate for the detection and diagnosis of the specific types of behavioral and mood disorders linked to a history of head impacts in former professional football players. One of these two tests, the Mini International Neuropsychiatric Interview (M.I.N.I.), is not sufficient to evaluate specific areas of impairments, such as impulsivity, rage, and aggression.

Further, its inclusion in the battery is unnecessary because the results are not used in any way to determine compensable diagnosis. The second of these tests, the MMPI-2RF, is inappropriate for patients with dementia. Even if the results were to be used for any reason, they would likely be inaccurate or incomplete in that the test requires the patient to complete 338 yes-no questions about psychological state and personality; such a task would not be possible by the majority of patients with the severity of dementia included in the compensable diagnoses. As described above, it is my opinion that there must be an appropriate evaluation of mood and behavioral impairment as part of the BAP evaluation, and in the proposed Settlement none exists and there is no inclusion of any mood or behavioral impairment in the definitions of compensable diagnoses.

46. The Test Battery includes extensive testing for performance validity in order to assure that the Class Member's test data represent a valid reflection of the former player's optimal level of functioning, even though patients with moderate dementia have been found to perform poorly (i.e., false positives) on effort testing. Although it is appropriate to consider suboptimal effort in any neuropsychological evaluation for possible compensation, it should be noted that the only compensable findings of the evaluation are Level 1.5 and 2 Neurocognitive Impairment. These represent mild to moderate stages of dementia and require significant impairment on numerous tests in the battery. There have been several studies that indicate that recommended cut-off scores on at least one of the effort tests included in the battery (Test of Memory Malingering) are not appropriate for use in patients with dementia due to an excessive number of false positives (e.g., Bortnick et al., 2013; Teichner & Wagner, 2004). That is, because patients with dementia are so impaired cognitively, they may perform poorly on the effort test due to their actual cognitive impairment rather than poor effort or malingering. It is my scientific opinion, based on the medical and scientific literature and on my own clinical and research experience, that reliance on the effort measures included in the Neuropsychological Test Battery would unfairly deprive at least some otherwise eligible persons with measurable cognitive deficits of compensation.

## III. THE HIGH THRESHOLD FOR COMPENSATION BASED ON LEVEL OF COGNITIVE IMPAIRMENT DEFINED BY THE SPECIFIC TEST FINDINGS AND ALGORITHM DETAILED IN EXHIBIT 2 OF THE SETTLEMENT WOULD DEPRIVE PERSONS WITH DOCUMENTED COGNITIVE DEFICITS OF COMPENSATION.

47. To be eligible for compensation under Neurocognitive Impairment Level 1.5 or 2.0, the Class Member would have to be so severely impaired in several areas of cognitive functioning that they would require assistance in many activities of daily living (in Level 1.5) or be almost fully dependent on another person for most activities of daily living, such as bathing and toileting (for Level 2.0). Specifically, the definitions of Level 1.5 Neurocognitive Impairment and Level 2 Neurocognitive impairment require that the Class Member exhibits functional impairment consistent with the criteria set forth in the National Alzheimer's Coordinating Center's (NACC) Clinical Dementia Rating (CDR) scale. For Level 1.5 Neurocognitive Impairment, the Class Member must meet criteria for CDR Category 1.0 in the areas of Community Affairs, Home & Hobbies, and Personal Care. For Level 2 Neurocognitive Impairment, the Class Member must meet criteria for CDR Category 2.0 in the areas of Community Affairs, Home & Hobbies, and Personal Care. According to the CDR, Category 1.0 would require the individual to be unable to function independently at a job, shopping, and volunteer and social groups; to have mild but definite impairment in functioning independently at home, with more difficult chores abandoned, and more complicated hobbies and interests abandoned; and would need prompting for personal care functions, such as dressing, toileting, and bathing. CDR Category 2.0 would require the individual to have no pretense of independent functioning outside home; would only have simple chores preserved; would have very restricted interests; and would require assistance in dressing, hygiene, and keeping of personal effects (Morris, 1993; NACC, https://www.alz.washington.edu/NONMEMBER/UDS/DOCS/VER2/ivpguide.pdf).

48. The algorithm used in the Settlement to translate test performance into compensable Neurocognitive Impairment categories is not one that is used in any known or published set of criteria for the determination of dementia, and utilizes a threshold of impairment that would exclude many Class Members with dementia. To clarify the specific content of Exhibit 2 of the Settlement and understand the algorithm used, it is important to understand the statistical terminology used in the criteria. Neuropsychological tests are developed to result in test scores that are roughly distributed as a normal ("bell-shaped") curve. The tests are typically standardized on a large group of healthy individuals who do not have any known neurological disorder or other possible cause of cognitive impairment. That "normative group" is made up of individuals across

different age and educational levels, as well as gender and sometimes ethnic, racial, and geographical groups. The results of the normative group's performance on the test are used to create standardized scores, such that when the test is administered to a patient (or in this case a former NFL player), that person's raw score (e.g., the number correct or the time to completion) is compared to the scores from the appropriate reference group from the normative sample. The raw score is then transformed to a standardized score that is then used to interpret the level of performance.

49. A T score is one of the types of standardized scores used to determine the level of performance on the test by the patient. A T score has a mean of 50 (i.e., the average score of the reference normative group is 50) and a standard deviation of 10. A standard deviation is a measure of the distribution of scores in the normative group, such that approximately 68% of the normative group scored within one standard deviation of the mean. That translates into 68% of the healthy normative group having T scores between 40 and 60. Another way to interpret this is that a T score of 40 would be equivalent to approximately the 16th percentile, i.e., only 16 percent of the "normal" healthy population would be expected to score below that level. A T score of 30 (i.e., two standard deviations below the mean) would indicate that only 2.3 percent of the healthy population would be expected to score below that level.

50. As described in Exhibit 2 of the Settlement, the "basic principle for defining impairment on testing is that there must be a pattern of performance that is approximately … 1.7-1.8 standard deviations (for Level 1.5 Impairment) or 2 standard deviations (for Level 2 Impairment) below the person's expected level of premorbid functioning." (Settlement, Exhibit 2, p. 5). Using the tables provided in Exhibit 2 of the Settlement, a Class Member with Average Estimated Intellectual Functioning, for example, would be required to perform worse than 97 percent of same age peers in the published normative reference group on two or more (of six) Learning and Memory tests AND two or more (of four) Executive Function tests, in order to qualify for benefits under the Settlement. As seen in several studies comparing cognitively healthy elderly controls with patients diagnosed with moderate dementia, and often even with severe dementia, it is not common for dementia patients to score consistently more than two standard deviations below healthy controls (e.g., Caccappolo-Van Vliet et al., 2003; de Jager et al., 2003). However, the criteria used in the Settlement would require that the

Class Member's test performance be even more impaired than what is often seen in well-diagnosed cases of moderate stage dementia.

51. The algorithm used to translate test performance into compensable Neurocognitive Impairment categories is arbitrary, nonstandard, and not supported by any scientific literature. There are three different tables in Exhibit 2 of the Settlement used to determine the specific levels of test performance required to meet the categories of Neurocognitive Impairment based on three different levels of "Estimated Intellectual Functioning." That is, the specific number of impaired tests per cognitive domain (e.g., 3 or more versus 2 or more) and the specific level of impairment (e.g., T Score below 35 versus below 37) is different based on whether a Class Member is determined to have Below Average, Average, or Above Average Estimated Intellectual Functioning. Although it is common practice in neuropsychological assessment to compare an individual's performance to expected premorbid levels for that individual, it is uncommon to create distinct criteria tables for levels of impairment based on a single estimate of premorbid functioning to be used across large groups of individuals. And, most importantly, for an algorithm to be used for any decision-making purpose (e.g., determination of large sums of compensation), it must be shown to be valid and reliable in the specific population for which it is being used, a process that requires extensive research. There is no mention in the description of this algorithm that it has undergone any research to determine its appropriateness for this use.

52. As defined in Exhibit 2 of the Settlement, Estimated Premorbid Intellectual Ability is determined by the Test of Premorbid Functioning (TOPF), which "provides three models for predicting premorbid functioning: (a) demographics only, (b) TOPF only, and (c) combined demographics and TOPF prediction equations" (Settlement Exhibit 2, p. 4).

53. Based on the TOPF, Class Members would be categorized into one of the following three categories of Estimated Intellectual Functioning: (1) Below Average (estimated IQ below 90); (2) Average (estimated IQ between 90 and 109); and (3) Above Average (estimated IQ above 110). A Class Member who, based solely on the TOPF predictions of premorbid functioning, is in the Below Average category would have to perform more poorly on more tests than a Class Member who is in the Average or Above Average categories. As an additional exemplar, I will compare two hypothetical cases who receive the exact same test scores on the

Neuropsychological Test Battery with the exception of TOPF scores. Based on the TOPF, the first case would be classified as having Below Average Estimated Intellectual Functioning, whereas the second case would be classified as having Above Average Estimated Intellectual Functioning. The age of both cases is the same, as is the number of qualifying seasons in the NFL. In both cases, the two worse areas of performance are in Learning and Memory and Executive Function. Both cases had two Learning and Memory tests with T scores of 34 and one Learning and Memory test with a T score of 36; all other Learning and Memory tests had better scores (i.e., T scores above 37). Both cases also had two Executive Function tests with T scores of 35 and one Executive Function test with a T score of 36; all other Executive Function tests had better scores (i.e., T scores above 40). Therefore, with the exact same performance on the exact same tests (other than the TOPF word pronunciation test), the first case would not qualify for any compensable diagnosis, whereas the second case would qualify for financial compensation with a diagnosis of Level 1.5 Neurocognitive Impairment.

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De Jager, C. A., Hogervorst, E., Combrinck, M., & Budge, M.M. (2003).Sensitivity and specificity of neuropsychological tests for mild cognitive impairment, vascular cognitive impairment and Alzheimer's disease. Psychological Medicine, 33, 1039–1050

McKee, A., Stern, R., Nowinski, C., Stein, T., Alvarez, V., Daneshvar, D., Lee, H., Wojtowicz, S., Hall, G., Baugh, B., Riley, D., Kubilis, C., Cormier, K., Jacobs, M., Martin, B., Abraham, C., Ikezu, T., Reichard, R., Wolozin, B., Budson, A., Goldstein, G., Kowall, N., & Cantu, R. (2013). The spectrum of disease in chronic traumatic encephalopathy. Brain, 136, 43-64.

McKhann GM, Knopman DS, Chertkow H, et al. (2011).The diagnosis of dementia due to Alzheimer's disease: Recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. Alzheimer's and Dementia, 7, 263-269.

Montenigro, P.H., Baugh, C.M., Daneshvar, D.H., Mez, J., Budson, A.E., Au, R., Katz, D., Cantu, R.C., & Stern, R.A. (2014). Clinical subtypes of chronic traumatic encephalopathy: Literature review and proposed research diagnostic criteria for Traumatic Encephalopathy Syndrome. Alzheimer's Research and Therapy, 6, 68.

Morris, J.C. (1993). The Clinical Dementia Rating (CDR): Current vision and scoring rules Neurology, 43:2412-2414

Stern, R.A., Daneshvar, D.H., Baugh, C.M., Seichepine, D.R., Montenigro, P.H., Riley, D.O., Fritts, N.G., Stamm, J.M., Robbins, C.A., McHale, L., Simkin, I., Stein, T.D., Alvarez, V., Goldstein, L.E., Budson, A.E., Kowall, N.W., Nowinski, C.J., Cantu, R.C., & McKee, A.C. (2013). Clinical presentation of Chronic Traumatic Encephalopathy. Neurology, 81, 1122-1129.

Teichner, G.L., &Wagner, M.T. (2004).The Test of Memory Malingering (TOMM): normative data from cognitively intact, cognitively impaired, and elderly patients with dementia. Archives of Clinical Neuropsychology, 19, 455-464.

Pursuant to 28 U.S.C. § 1746, I state under penalty of perjury that the foregoing is true and correct:

Robert A. Stern, Ph.D.

Date: October 6, 2014

# Curriculum Vitae
# Robert A. Stern, PhD

Alzheimer's Disease Center and CTE Center
Boston University School of Medicine
72 East Concord St., B7380
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Telephone: (617) 638-5678
Fax: (617) 638-5679
Email: bobstern@bu.edu
Web Sites: www.bu.edu/cte
www.bu.edu/alzresearch
October 2014

**ACADEMIC TRAINING:**

| | |
|---|---|
| 1980 B.A. | Wesleyan University, Middletown, CT |
| 1984 M.A. | University of Rhode Island, Kingston, RI, Psychology |
| 1988 Ph.D. | University of Rhode Island, Kingston, RI, Clinical Psychology (Clinical Neuropsychology Specialization); |
| 1986-1987 | Pre-Doctoral Internship in Clinical Neuropsychology; Mentor Edith Kaplan, Ph.D.; Department of Veterans Affairs Medical Center, Boston, MA |

**POSTDOCTORAL TRAINING:**

| | |
|---|---|
| 1988-1990 | Fellow in Neuropsychology and Psychoneuroendocrinology; Mentor Arthur J. Prange, Jr., MD; University of North Carolina School of Medicine, Chapel Hill, NC |

**ACADEMIC APPOINTMENTS:**

| | |
|---|---|
| 1988-1990 | Clinical Instructor of Psychiatry, University of North Carolina School of Medicine |
| 1990-1993 | Assistant Professor of Psychiatry, University of North Carolina School of Medicine |
| 1991-1993 | Clinical Assistant Professor of Speech and Hearing Sciences, University of North Carolina School of Medicine |
| 1991 - 1993 | Research Scientist, Brain and Development Research Center University of North Carolina School of Medicine |
| 1993-1996 | Assistant Professor of Psychiatry and Human Behavior, Brown Medical School |
| 1993-1996 | Assistant Professor of Clinical Neurosciences (Neurology), Brown Medical School |
| 1994-2004 | Adjunct Assistant Professor, Behavioral Neuroscience Program, Division of Graduate Medical Sciences, Boston University School of Medicine |
| 1996-2003 | Associate Professor of Psychiatry and Human Behavior, Brown Medical School |
| 1996-2003 | Associate Professor of Clinical Neurosciences (Neurology), Brown Medical School |
| 1997-2004 | Graduate Faculty Member, University of Rhode Island |
| 2002-2003 | Faculty Member, Brain Science Program, Brown University |
| 2005-Present | Faculty Member, Behavioral Neuroscience Program, Division of Graduate Medical Sciences, Boston University School of Medicine |
| 2005-2011 | Associate Professor of Neurology, Boston University School of Medicine |
| 2011-Present | Professor of Neurology and Neurosurgery, Boston University School of Medicine |
| 2014-Present | Professor of Neurology, Neurosurgery, and Anatomy and Neurobiology, Boston University School of Medicine |

**HOSPITAL APPOINTMENTS:**

| | |
|---|---|
| 1986-1988 | Assistant in Neuropsychology, McLean Hospital, Belmont, MA |
| 1990-1993 | Clinical Neuropsychologist; Director, Adult Neuropsychology Laboratory; UNC Hospitals, Chapel Hill, NC |
| 1993-2003 | Clinical Neuropsychologist, Women's and Infants Hospital, Providence, RI |
| 1993-2003 | Clinical Neuropsychologist, Rhode Island Hospital, Providence, RI |
| 1994-1995 | Supervising Neuropsychologist, Slater Hospital, Cranston, RI |
| 1994-2003 | Director, Memory and Cognitive Assessment Program, Rhode Island Hospital, Providence, RI |
| 1997-2003 | Director, Neuropsychology Program; Rhode Island Hospital, Providence, RI |
| 2004-Present | Clinical Neuropsychologist, Boston Medical Center (Boston University Neurology Associates), Boston, MA |
| 2014-Present | Core Faculty Member, Boston Medical Center Injury Prevention Center |

**HONORS:**

| | |
|---|---|
| 1980 | Honors in Psychology, Wesleyan University, Middletown, CT |
| 1980 | Heidman Prize (for Community Service), Wesleyan University, Middletown, CT |
| 1984 | Psi Chi National Honor Society in Psychology |
| 1988 | Phi Kappa Phi National Honor Society |
| 1997 | Master of Arts *ad eundem*, Brown University, Providence, RI |
| 1997 | Independent Investigator Award, National Alliance for Research on Schizophrenia & Depression (NARSAD) |
| 1999 | Outstanding Teaching Award in Psychology, Brown University School of Medicine, Providence, RI |
| 2001 | Fellow, American Neuropsychiatric Association |
| 2001 | Fellow, National Academy of Neuropsychology |
| 2008 | National Research Award, Alzheimer's Association MA/NH Chapter |

**LICENSES AND CERTIFICATION:**

| | |
|---|---|
| 1990-1994 | Licensed Psychologist, North Carolina License # 1560 |
| 1993-2008 | Licensed Psychologist, Rhode Island # 491 |
| 1992-Present | Registrant, National Register of Health Service Providers in Psychology |
| 1997-Present | Licensed Psychologist HSP, Massachusetts # 7238 |

**DEPARTMENTAL AND UNIVERSITY COMMITTEES:**

| | |
|---|---|
| 1994-1995 | Leadership Committee, Department of Psychiatry, Rhode Island Hospital |
| 1994-1996 | Committee for the Protection of the Rights of Human Subjects (IRB), Rhode Island Hospital |
| 1994-1997 | Research Committee, Department of Psychiatry and Human Behavior, Brown Medical School, RI |
| 1995-1996 | IRB Executive Committee Member, Rhode Island Hospital |
| 1995-2003 | Brown University Geriatric Neuropsychiatry Research and Treatment Program, Brown Medical School, RI |
| 1998-2000 | Continuing Medical Education Subcommittee, Department of Psychiatry, Rhode Island Hospital |
| 1999-2002 | Library Committee, Lifespan (Rhode Island Hospital and Miriam Hospital) |
| 2001-2002 | Training Committee, Brown University Clinical Psychology Training Consortium, Brown Medical School, RI |
| 2004-Present | Executive Committee, Alzheimer's Disease Center, Boston University School of Medicine |

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|---|---|
| 2006-2012 | Executive Committee, Alzheimer's Disease Advisory (Philanthropic) Board, Boston University School of Medicine |
| 2012-present | Faculty Appointment and Promotions Committee, Boston University School of Medicine |

**TEACHING EXPERIENCE AND RESPONSIBILITIES:**

| | |
|---|---|
| 1990-1993 | Member, Clinical Psychology Training Program, UNC School of Medicine |
| 1990-1993 | Regular Lecturer for Internship Seminar Series, UNC School of Medicine |
| 1990-1993 | Mentor and Supervisor, Neuropsychology Clinical Post-doctoral Fellows and Pre-doctoral Interns, Dept. of Psychiatry, UNC School of Medicine |
| 1990-1993 | Mentor for Psychiatry Research Fellows, Research Fellowship Training Program, UNC School of Medicine |
| 1990-1993 | Member, Training Faculty Institutional National Research Service Award Fellowship Training Program; Brain and Development Research Center, UNC School of Medicine |
| 1990-1993 | Co-director, Neuropsychiatry Seminar Series, UNC School of Medicine |
| 1990-1993 | Regular lecturer, Consult/Liaison Seminar Series, UNC Psychiatry Residency Training Program, UNC School of Medicine |
| 1990-1993 | Co-director, "Brain-Behavior Relationships", 3rd year medical school course; UNC School of Medicine |
| 1990-1993 | Regular Lecturer, 1st year Neurobiology Course, UNC School of Medicine |
| 1990-1993 | Regular Lecturer, "Adult Language Disorders" Course, Division of Speech and Hearing Sciences; UNC School of Medicine |
| 1990-1993 | Regular Lecturer, Graduate Neuropsychology Course, UNC |
| 1990-1993 | Regular Lecturer, Undergraduate Neuropsychology Seminar, UNC |
| 1993 | Non-faculty member of Ph.D. Dissertation Committees; Suffolk University, North Carolina State University, University of Alabama, University of New South Wales, Australia |
| 1993-2003 | Member, Neuropsychology Training Faculty; mentored clinical and research neuropsychology fellows and interns; Brown University |
| 1993-2003 | Supervised research placements for neuropsychology pre-doctoral interns; Brown University |
| 1993-2003 | Regular lecturer for Neuropsychology Seminar Series, Brown Medical School |
| 1993-2003 | Regular lecturer for Neuropsychology Rounds, Brown Medical School |
| 1993-2003 | Training Faculty, Neuropsychiatry/Behavioral Neurology Fellowship, Depts. Of Psychiatry & Human Behavior and, Department of Clinical Neurosciences, Brown Medical School |
| 1993-2003 | Regular lectures for Post-doctoral Fellow Lecture Series; Clinical Psychology Training Consortium, Brown Medical School |
| 1993-2003 | Lecturer for Psychiatry Residency Training Program for PGY 1, 2, 3 and 4 Lecture Series, Brown Medical School |
| 1993-2003 | Lecturer for First Year Medical Students Medical Interviewing Seminar, Brown Medical School |
| 1993-2003 | Mentor for Undergraduate Independent Study Courses, Departments of Neuroscience, Psychology, and others, Brown University |
| 1993-2004 | Supervised Practicum Training Site for Clinical Psychology Graduate Students, Undergraduate Psychology Internship Placement; URI |
| 1994-Present | Annual lecturer for Basic Neurosciences Course, Behavioral Neurosciences Program, BUSM |
| 1999-2007 | Clinical Practicum Supervisor; Suffolk University Clinical Psychology Program |
| 2001–2002 | Coordinator, Internship Training Program Neuropsychology Track, Brown University Clinical Psychology Training Consortium |

| | |
|---|---|
| 2001-2002 | Training Committee Member; Brown University Clinical Psychology Training Consortium |
| 2003 | Core Faculty Member, Brown University T32 Dementia Research Training Program |
| 2004-Present | Annual lecturer for Human Neuropsychology Seminar, Behavioral Neurosciences Program, BUSM |
| 2004-Present | Lecturer for Neurology Residency Training Program Lecture Series |
| 2005-2007 | Advisor (for 40 graduate students), BUSM Graduate Medical Sciences Masters Program |
| 2005-Present | Director, Post-Doctoral Neuropsychology Training Program, Alzheimer's Disease Center, BUSM |
| 2005-Present | Director and Lecturer for Neuropsychology and Dementia Seminar Series, Geriatric Medicine, Dentistry & Psychiatry Fellowship Program |
| 2005-Present | Consulting Neuropsychologist and Research Mentor, APA Accredited Internship and Fellowship Clinical Neuropsychology Training Program; Bedford (MA) Veterans Affairs Medical Center |
| 2006-2008 | Course Co-Director, Neuropsychological Assessment, Behavioral Neurosciences Program, BUSM |
| 2007-2008 | Lecturer for Biology of Disease (Neurology) Course, BUSM Preclinical Medical School Course |
| 2010-Present | CME Annual Course Co-Director, Brain Trauma and the Athlete, BUSM |
| 2011-Present | Core Faculty Member, Alzheimer's Disease Translational Research Training Program (National Institute on Aging T32), BUSM |
| 2012-Present | CME Course Co-Director, Chronic Traumatic Encephalopathy, co-sponsored by BUSM and the Cleveland Clinic Lou Ruvo Center for Brain Health; Las Vegas, September 30-October 1, 2012 |

**MAJOR MENTORING ACTIVITIES:**

Undergraduate Honors Theses Supervised

1991 Wendy Cox, "Effects of Physostigmine on Mood and Sustained Attention," Psychology Department, University of North Carolina

1992 Boykin Robinson, "Self-Report of Emotional and Cognitive Complaints in Individuals with Graves' Disease: A Survey Study," Psychology Department, University of North Carolina

1996 Mara Lowenstein, "Neuropsychological Functioning in Alzheimer's Disease and Vascular Dementia: A Qualitative Assessment of the Rey-Osterrieth Complex Figure," Psychology Department, Brown University

1997 Yamini Subramanian, "The Thyroid Axis and Seizure Threshold: Examining a Mechanism of Thyroid Hormone Augmentation of ECT," Neuroscience Department, Brown University

2002 Anna Podolanczuk, "Thyroid Hormone Levels in Post-Mortem Alzheimer's and Control Brains," Neuroscience Department, Brown University

Master's Theses Supervised

1998 Jennifer Latham, "The Visual Analog Mood Scales for Adolescents : A Preliminary Examination of Reliability and Validity," Psychology Department, University of Rhode Island

2000 Jessica Somerville, "A Comparison of Administration Procedures for the Rey-Osterrieth Complex Figure: Flow-Charts Vs. Pen-Switching," Psychology Department, University of Rhode Island

2000 Susan L. Legendre, "The Influence of Cognitive Reserve on Memory After Electroconvulsive Therapy," Psychology Department, University of Rhode Island

2005 Veronica Santini, "Thyroid-Neurobehavioral Relationships in the Elderly," Division of Graduate Medical Sciences, Boston University School of Medicine

2006 Daniel Daneshvar, "Association between Smoking, APOE, and Risk for Mild Cognitive Impairment and Alzheimer's Disease," Division of Graduate Medical Sciences, Boston University School of Medicine
2006 Laura Ridgely, "The Public Health Risk of Unsafe Elderly Drivers and Drivers with Dementia: Current Problems and Steps to be Taken," Division of Graduate Medical Sciences, Boston University School of Medicine
2007 David Essaff, "Executive Dysfunction in Early Alzheimer's Disease (AD) and Mild Cognitive Impairment: A Potential Cognitive Marker for Preclinical AD," Division of Graduate Medical Sciences, Boston University School of Medicine
2007 Meghan Lembeck, "Racial Disparities and Mild Cognitive Impairment Diagnosis: The Effects of Literacy Correction on Neuropsychological Test Scores," Division of Graduate Medical Sciences, Boston University School of Medicine
2008 Jessica A. Riggs, "Current Approaches to Alzheimer's Disease Treatment: A Focus on Passive Immunotherapy," Division of Graduate Medical Sciences, Boston University School of Medicine
2009 Vlada Doktor, "Clinical utility of Self and Informant's Complaint in Mild Cognitive Impairment and the Rate of Progression to Alzheimer's Disease," Division of Graduate Medical Sciences, Boston University School of Medicine
2011 John Picano, "Defining Concussions: A Literary and Empirical Analysis of Sports-Related Concussion."
2013 Alexandra Bourlas, "The Effects of Level and Duration of Play on Cognition, Mood and Behavior Among Former Football Players."

Doctoral Dissertations Supervised

1991 Susan L. Silva, "The Effects of Physostigmine on Cognition, Mood, and Behavior," Department of Psychology, North Carolina State University
1993 Mark L. Prohaska, "Thyroid, Lithium, and Cognition: The Use of Thyroid Hormone Augmentation in the Reduction of Cognitive Side Effects Associated with Lithium Maintenance," Psychology Department, University of Alabama
1999 Debbie J. Javorsky, "A Validation Study of the Boston Qualitative Scoring System (BQSS) for the Rey-Osterrieth Complex Figure," Psychology Department, University of Rhode Island
2003 Susan L. Legendre, "The Influence of Cognitive Reserve on Neuropsychological Functioning After Coronary-Artery Bypass Grafting (CABG)," Psychology Department, University of Rhode Island
2004 Jessica Somerville Ruffolo, "Visuoconstructional Impairment: What Are We Assessing and How Are We Assessing It?," Psychology Department, University of Rhode Island
2014 Stacy Anderson, "Episodic Memory and Executive Function in Familial Longevity" (Second Reader), Behavioral Neurosciences Program, Boston University School of Medicine.

Current PhD and MD/PhD Students

Julie Stamm (Mentor for NIH F31 Grant 1F31NS081957; 2013-Present; PhD candidate, Dept of Anatomy and Neurobiology)
Philip Montenigro (MD/PhD candidate, Dept. of Anatomy and Neurobiology)
Daniel Corps (visiting PhD student from Melborne, Australia)

Post-Doctoral Fellows Trained

| | |
|---|---|
| 1991-1993 | Susan Silva, Ph.D., now Research Associate Professor at Duke University |
| 1992-1993 | Mareah Steketee, Ph.D., now Adjunct Associate Professor at UNC-Chapel Hill |
| 1993-1995 | Mark Prohaska, Ph.D., now Director, Neuropsychology Clinic, Alabama |
| 1994-1996 | James Arruda, Ph.D., now Associate Professor at University of West Florida |
| 1994-1996 | Garrie Thompson, Ph.D., now Clinical Neuropsychologist, Florida |
| 1996-1998 | Geoffrey Tremont, Ph.D., now Associate Professor at Brown University |
| 1998-2000 | Holly Westervelt, Ph.D., now Clinical Assistant Professor at Brown University |
| 1998-2000 | Debbie Javorsky, Ph.D., now Clinical Neuropsychologist, New Hampshire |
| 2000-2001 | Michael Ropacki, Ph.D., now Medical Director, Global Medical Affairs, Janssen Alzheimer Immunotherapy |
| 2000-2002 | Caitlin Macaulay, Ph.D., now Clinical Neuropsychologist at Lahey Clinic, Massachusetts |
| 2001-2004 | Jennifer Duncan Davis, Ph.D., now Assistant Professor at Brown University |
| 2002-2003 | Richard Temple, Ph.D., now Vice President of Clinical Operations at Core Health Care |
| 2003-2004 | Laura Brown, Ph.D., now Clinical Neuropsychologist, Rhode Island |
| 2003-2004 | Mary Beth Spitznagel, Ph.D., now Assistant Professor at Kent State University |
| 2004-2005 | Angela Jefferson, Ph.D., now Associate Professor at Vanderbilt University |
| 2005-2007 | Lee Ashendorf, Ph.D., now Clinical Neuropsychologist at Bedford VAMC |
| 2007-2009 | Brandon Gavett, Ph.D., now Assistant Professor at Univ. of Colorado, Colorado Springs |
| 2010-2011 | Katherine Gifford, Ph.D., now Fellow at Vanderbilt University |
| 2012-2013 | Daniel Seichepine, Ph.D. |
| 2012-2014 | Elizabeth Vassey, Ph.D. |
| 2013-Present | Todd Solomon, Ph.D. |

**MAJOR ADMINISTRATIVE RESPONSIBILITIES:**

| | |
|---|---|
| 1991-1993 | Director, Neurobehavioral Assessment Core, NIMH-funded Mental Health Clinical Research Center, UNC School of Medicine |
| 1992-1993 | Acting Director, Data Management/Biostatistics Core, NIMH-funded Mental Health Clinical Research Center, UNC School of Medicine |
| 1992-1993 | Associate Center Director, NIMH-funded Mental Health Clinical Research Center, UNC School of Medicine |
| 1995-1996 | Vice Chair, Committee for the Protection of the Rights of Human Subjects (IRB), Rhode Island Hospital |
| 2001-2002 | Coordinator of Neuropsychology Track, Internship Training Program, Brown Clinical Psychology Training Consortium, Brown Medical School |
| 2004-Present | Director of Neuropsychology, Alzheimer's Disease Clinical and Research Program, Boston University School of Medicine (BUSM) |
| 2004-2008 | Associate Director, Alzheimer's Disease Center (NIA-Funded) Clinical Core, BUSM |
| 2004-2006 | Associate Director, Alzheimer's Disease Clinical and Research Program, BUSM |
| 2006-2010 | Co-Director, Alzheimer's Disease Clinical and Research Program, BUMC |
| 2008-2012 | Co-Director, Center for the Study of Traumatic Encephalopathy, BUSM |
| 2009-2010 | Acting Director, Alzheimer's Disease Clinical and Research Program, BUMC |
| 2009 | Acting Director, Alzheimer's Disease Center (NIA-Funded) Clinical Core, BUSM |
| 2010-Present | Director, Alzheimer's Disease Center (NIA-Funded) Clinical Core, BUSM |
| 2011-2012 | Director, Alzheimer's Disease Clinical and Research Program, BUMC |
| 2011-2012 | Co-Chair, Global Advisory Committee, INternational Registry Of Alzheimer's Disease patientS (INROADS), Janssen Alzheimer Immunotherapy |
| 2011-Present | Site Director (BU) and Steering Committee Member, Alzheimer's Disease Cooperative Study (NIA-Funded) |
| 2014-Present | Director of Clinical Research, CTE Center, BUSM |

## OTHER PROFESSIONAL ACTIVITIES:

**PROFESSIONAL SOCIETIES: MEMBERSHIPS, OFFICES, AND COMMITTEE ASSIGNMENTS**

International Neuropsychological Society (Member, 1987-Present)
Member, Scientific Program Committee, 1997-1999
Meeting Development Coordinator, 1999-2001

American Psychological Association Division 40, Clinical Neuropsychology (Member, 1988-Present)
Member, Scientific Advisory Committee, 1995-1997

American Psychological Association Division 12, Clinical Psychology (Member, 1988-Present)

National Academy of Neuropsychology (Member, 1990-Present)
Fellow, Appointed 2001

American Neuropsychiatric Association (Member, 1995-Present)
Fellow, Appointed 2001
Member, Scientific Program Committee, 1995-1999
Co-Director, Annual Meetings, 1997-1999
Member, Awards Committee, 2006-Present

Massachusetts Neuropsychological Society (Member, 2007-Present)

International Society to Advance Alzheimer Research and Treatment (Member, 2008-Present)

**EDITORIAL BOARDS:**

| | |
|---|---|
| 1998-Present | Associate Editor, *Journal of Neuropsychiatry and Clinical Neurosciences* |
| 2001-2003 | Consulting Editor, *Assessment* |
| 2008-Present | Editorial Board Member, *Archives of Clinical Neuropsychology* |
| 2010-Present | Review Editor, *Frontiers in Neurotrauma* |
| 2011-Present | Review Editor, *Frontiers in Sports Neurology* |
| 2012-Present | Series Editor, Traumatic Brain Injury Series, *Alzheimer's Research and Therapy* |

**JOURNAL REVIEWER**

Alzheimer's Disease and Associated Disorders
Archives of Neurology
Brain and Cognition
Cognitive and Behavioral Neurology
Injury Epidemiology
International Journal of Geriatric Psychiatry
International Review of Psychiatry
Journal of Clinical and Experimental Neuropsychology
Journal of the International Neuropsychological Society
Journal of the Neurological Sciences
Journal of Nutrition, Health and Aging
Neurology
Neurology: Clinical Practice
Neurology Psychiatry & Brain Research
Neuropsychology
Neuroscience & Biobehavioral Reviews
PLOS ONE
The Clinical Neuropsychologist

## MAJOR COMMITTEE ASSIGNMENTS:

**Federal Government**

| | |
|---|---|
| 1998 - 1999 | Independent Neuropsychological Review Committee V.A. Cooperative Study #029, "Evaluation of a Computer-Assisted Neuropsychological Screening Battery", Department of Veterans Affairs |
| 2012 – Present | Member, Advisory Board, DoD ADNI (Effects of traumatic brain injury and post traumatic stress disorder on Alzheimer's disease in Veterans using ADNI; PI: MW Weiner) |

**Private/Foundation**

| | |
|---|---|
| 1993-Present | Member, Medical Advisory Board, National Graves' Disease Foundation |
| 2007-Present | Member, Medical Advisory Board, Sports Legacy Institute |
| 2007-Present | Member, Medical & Scientific Advisory Committee, Massachusetts/New Hampshire Chapter, Alzheimer's Association |
| 2010-Present | Member, Mackey-White Traumatic Brain Injury Committee, National Football League Players Association; Co-Chair of Subcommittee on Former Player Research |

**Study Sections**

*National Institutes of Health*

| | |
|---|---|
| 1993 | Ad hoc Reviewer, Mental Health AIDS and Immunology Review Committee: Psychobiological, Biological, and Neuroscience Subcommittee |
| 1995 | Ad hoc Reviewer, Mental Health Small Business Research Review |
| 1995-1996 | Reviewers Reserve (NRR; Study Sections) Member |
| 1996-1998 | Mental Health Small Business Research Review Committee Member |
| 1999 | Ad hoc Reviewer, Small Business Research Review Committee |
| 2000 | Ad hoc Reviewer, Special Emphasis Panel – ZMH1-CRB-B01 |
| 2013 | Ad hoc Reviewer, Special Emphasis Panel - ZRG1 BBBP-D02 |

*Other National Review Committees*

| | |
|---|---|
| 1998-Present | Initial Review Board of the Medical and Scientific Advisory Council, Alzheimer's Association |
| 2013 | Reviewer, US Army Medical Research and Materiel Command (USAMRMC) |

*International*

| | |
|---|---|
| 2013 | External Advisor, Wellcome Trust Strategic Award Committee (SAC) |

## CONSULTANT ACTIVITIES:

| | |
|---|---|
| 1991-1992 | Cato Research, Ltd. (Clinical Trials Design and Implementation) Durham, NC |
| 1995-2003 | "HIV: Neuropsychiatric and Psychoimmune Relationships" (Dwight Evans, PI; R01 Grant), Department of Psychiatry, University of Pennsylvania |
| 2004-2006 | "A Telephone Intervention for Dementia Caregivers" (Geoffrey Tremont, PI; R21 Grant), Rhode Island Hospital/Brown Medical School |
| 2004-2006 | "A Longitudinal Study of Hazardous Drivers with Dementia" (Brian Ott, PI; R01 Grant), Memorial Hospital of Rhode Island/Brown Medical School |
| 2007-2009 | Outcome Science (for Forest Laboratories), Cambridge, MA |
| 2009 | Elan Pharmaceuticals, San Francisco, CA |
| 2011 | Neuronix, Yokneam, Israel |
| 2012 | Lilly (*Expert Advisor*), Indianapolis, IN |
| 2011-2012 | Janssen Alzheimer Immunotherapy, San Francisco, CA |
| 2013-Present | Athena Diagnostics (Quest), Worcester, MA |

**CURRENT OTHER SUPPORT:**

2014-2015 2R56NS078337-04, **PI: Stern**, Chronic Traumatic Encephalopathy: Clinical Presentation and Biomarkers (competing continuation), Total Costs: $785,813.

2014-2018 ADCS-Toyama Chemical Partnership; **Site PI: Stern**, A Phase 2 multi-center, randomized, double blind, placebo-controlled, parallel group study to evaluate the efficacy and safety of T-817MA in patients with mild to moderate Alzheimer's Disease (US202), Total Costs: $473,346.

2014-2015 Avid Radiopharmaceuticals; **PI: Stern**, 18F-AV-1451 and Florbetapir F 18 PET Imaging in Subjects with Repetitive Brain Trauma at High Risk for Chronic Traumatic Encephalopathy, Total Costs: $243,263.

2014-2015 R56NS089607, mPI: Au/McClean/Grafman **(Stern Co-Investigator)**, Precursors and Prognosis of Traumatic Brain Injury in Young to Middle Aged Adults, Total Costs: $634,227

2014-2016 Avid Radiopharmaceuticals; **Site PI: Stern**, 18F-AV-1451-A05: An open label, multicenter study, evaluating the safety and imaging characteristics of 18F-AV-1451 in cognitively healthy volunteers, subjects with Mild Cognitive Impairment, and subjects with Alzheimer's disease, Total Costs: $395,222.

2014-2019 Alzheimer's Disease Cooperative Study (ADCS), **Site PI: Stern**, Anti-Amyloid Treatment in Asymptomatic Alzheimer's Disease (A4 Study), Total Costs: $464,479.

2014-2019 Eli Lilly, **Site PI: Stern**, Effect of Passive Immunization on the Progression of Mild Alzheimer's Disease: Solanezumab (LY2062430) Versus Placebo, Total Costs: $395,270

2014-2016 Amarantus Holdings, Inc., **PI: Stern**, Amarantus LymPro Cell Cycle Dysfunction Blood Biomarker for AD and CTE, Total Costs: 54,600

2013-2016 DoD W81XWH-13-2-0064; Traumatic Brain Injury Research Award; **Co-PI: Stern** (Co-PI: M. Shenton), Tau Imaging of Chronic Traumatic Encephalopathy, Total Costs: $992,727

2013-2015 Eisai, Inc., **Site PI: Stern**, A Placebo-controlled, double-blind, parallel-group, Baysian Adaptive Randomization Design and Dose Regimen-finding study to evaluate safety, tolerability and efficacy of BAN2401 in subjects with early Alzheimer's disease, Total Costs: $391,342.

2013-2017 U01-NS086659; PI: McKee (**Stern, Co-Investigator**), CTE and Posttraumatic Neurodegeneration: Neuropathology and Ex Vivo Imaging, Total Costs: $6,000,000

2011-2015 R01NS078337-01A1, **PI: Stern**, Chronic Traumatic Encephalopathy: Clinical Presentation and Biomarkers, Total Costs: $ 2,035,330.

2011-2016 P30-AG13846, PI: N. Kowall; **Clinical Core Director: Stern**; Boston University Alzheimer's Disease Core Center; Total Costs: $5,986,877.

2010-2015 D01 HP08796, PI: S. Chao; **Neuropsychology Director: R.A. Stern**; Geriatric Medicine, Dentistry and Psychiatry Fellowship at Boston University; Total Direct Costs: $1,044,630

2009-2015 R01CA129769, **PI: Stern** (mPI: Mandelblatt, Ahles), Older Breast Cancer Patients: Risk for Cognitive Decline, Total Costs: $ 3,186,605

**PAST OTHER SUPPORT**

| | |
|---|---|
| 2008-2014 | R01MH080295, PI: Stern (MPI: R. Joffe), Subclinical Hypothyroidism: Mood, Cognition and the Effect of L-Thyroxine Treatment, Total Costs: $ 2,229,240 |
| 2009-2013 | Medivation, Inc. Protocol No. DIM18EXT, Site PI: R.A. Stern, Concert Plus: An Open-Label Extension of the Concert Protocol (DIM18) Evaluating Dimebon (Latrepirdine) in Patients with Alzheimer's Disease, Total Direct Costs: $30,768 |
| 2009-2013 | Wyeth/Pfizer Pharmaceuticals, Site PI: R.A. Stern, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel Group, Efficacy and Safety Trial of Bapineuzumab (AAB-001, ELN115727) in Patients with Mild to Moderate Alzheimer's Disease who are Apolipoprotein E 4 Carriers (Protocol 3133K1-3001-US), Total Direct Costs: $265,380 |
| 2008-2012 | Elan Pharmaceuticals (now Janssen Alzheimer's Immunotherapy), Site PI: R.A. Stern, A Phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled, Parallel Group, Efficacy and Safety Trial of Bapineuzumab (AAB-001, ELN115727) in Patients with Mild to Moderate Alzheimer's Disease who are Apolipoprotein E 4 Non-Carriers (Protocol ELN115727-301) and Carriers (Protocol ELN115727-302), Total Direct Costs: $500,000 |
| 2007-2012 | U01 AG10483, ADCS Contract (CFDA #93.866), Site PI: R.A. Stern, Multi-Center Trial to Evaluate Home-Based Assessment Methods for Alzheimer 's Disease Prevention Research in People Over 75 Years Old, Total Direct Costs: $117,750 |
| 2009-2011 | 5U01AG015477-07 ARRA. PI: J. Breitner; Site Director: R.A. Stern, Prevention of Alzheimer's Disease and Cognitive Decline, Total Direct Costs (Boston Site): $145,432 |
| 2009-2011 | National Operating Committee on Standards for Athletic Equipment Investigator Initiated Grant, PI: A.C. McKee & R.A. Stern, Neuropathological and Clinical Consequences of Repetitive Concussion in Athletes; Total Direct Costs: $249,992 |
| 2008-2011 | IIRG-08-89720 (Alzheimer's Association), PI: R.A. Stern, Assessment of Driving Safety in Aging, MCI and Dementia, Total Direct Costs: $240,000 |
| 2008-2011 | Alzheimer's Association Subcontract, PI: G. Feke; Site PI: R.A. Stern, Objective Biomarkers for Alzheimer's Disease in the Retina, Total Costs: $81,000 Subcontract |
| 2009-2010 | P30-AG13846 Supplement to P30 Center Grant, PI: R.A. Stern & A.C. McKee (N. Kowell, P30 PI); Development of Pathology Diagnostic Criteria for Chronic Traumatic Encephalopathy, Total Direct Costs: $83,287 |
| 2008-2009 | P30-AG13846 Supplement to P30 Center Grant, PI: R.A. Stern & A.C. McKee (N. Kowell, P30 PI); Neuropathologic Examination of Traumatic Encephalopathy in Athletes with Histories of Repetitive Concussion, Total Direct Costs: $100,000 |
| 2004-2009 | U01 AG023755, PI: T. Perls, Exceptional Survival and Longevity in New England, Total Direct Costs: $2,073,781 |
| 2006-2009 | R01 HG/AG02213, PI: R.C. Green, Risk Evaluation and Education for Alzheimer's Disease (REVEAL III), Total Direct Costs: $1,992,415 |
| 2000-2007 | U01 AG15477, PI: J. Breitner, The ADAPT Study: Alzheimer's Disease Anti-inflammatory Prevention Trial, Total Direct Costs to Boston Site: $561,246 |
| 2004-2006 | Massachusetts Institute of Technology AgeLab and The Hartford, PI: R.A. Stern; Driving and Dementia Total Direct Costs: $162,082 |
| 2004-2005 | Boston University Alzheimer's Disease Core Center Pilot Project Grant, PI: R.A. Stern Triiodothyronine Treatment of Alzheimer's Dementia, Total Direct Costs: $29,989 |

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| 2001-2004 | R21MH062561, PI: G. Tremont, A Telephone Intervention for Dementia Caregivers, Total Direct Costs: $375,000 |
| 2001-2005 | 5R01AG016335, PI: B. Ott, A Longitudinal Study of Hazardous Drivers with Dementia, $103,008, Subcontract |
| 1998-2004 | 5R01NS037840, PI: Ivan Miller. Title: Efficacy of a Family Telephone Intervention for Stroke, Total Direct Costs: $1,516,615 |
| 2000-2003 | Eisai, Inc. and Pfizer, Inc Investigator Initiated Grant, PI: R.A. Stern; Title: Clinical Trial of Donepezil Hydrochloride (Aricept) in Diminishing the Cognitive Impairment Associated with Electroconvulsive Therapy; Total Direct Costs: $108,854 |
| 1999-2003 | Alzheimer's Association Individual Research Grant; PI: R.A. Stern; Title: A Double-Blind Study of Donepezil with and without Thyroid Hormone in the Treatment of Alzheimer's Dementia Total Direct Costs; $163,626 |
| 2000-2002 | R44 MH58501, PI: T. White. Project PI: R.A. Stern; Title: A Modular Neuropsychological Test Battery (Subcontract with Psychological Assessment Resources, Inc) Total Direct Costs: $272,487, Subcontract (Project Total Direct: $1,305,245) |
| 1999-2000 | Psychological Assessment Resources, Inc. Contract; PI: R.A. Stern; Title: Development of a Modular Neuropsychological Test Battery; Total Direct Costs: $48,084 |
| 1999-2004 | Thyroid Research Advisory Council (TRAC) Individual Grant; PI: Geoffrey Tremont; Title: Cerebral Perfusion and Neuropsychological Functioning in Thyrotoxic Graves' Disease Patients; Total Direct Costs: $55,139 |
| 1997-2000 | National Alliance for Research on Schizophrenia and Depression Independent Investigator Award; PI: R.A. Stern; Title: Thyroxine Treatment of the Neurocognitive Side Effects of Lithium; Total Direct Costs: $92,592 |
| 1998 | R43 MH58501-01; PI: T. White; A Modular Neuropsychological Test Battery (subcontract) Total Direct Costs: $23,463, Subcontract |
| 1997-1998 | Research Fellowship Training Grant, Brown University Department of Psychiatry and Human Behavior; PI: Geoffrey Tremont and R.A. Stern; Psychiatric and Neuropsychologic Consequences of Graves' Disease; Total Direct Costs: $15,888 |
| 1996-1997 | Contract, Milkhaus Laboratory; PI: R.A. Stern; An Open-Label Treatment of 2CVV in the Amelioration of Neuropsychological and Psychiatric Symptoms Associated with Chronic Fatigue Syndrome (CFS); Total Direct Costs: $10,000 |
| 1995-1996 | Contract, Milkhaus Laboratory; PI: R. A. Stern; 2CVV in the Amelioration of Neuropsychological and Psychiatric Symptoms in Outpatients with Chronic Fatigue Syndrome: A Phase 1/2, Double-Blind, Placebo-Controlled Study; Total Direct Costs: $9575 |
| 1994-1995 | Research Fellowship Training Grant (PI: James Arruda, Ph.D., Fellow); Title: Neurobehavioral Functioning in Women Infected with HIV-1; Total Direct Costs: $17,500 |
| 1992-1997 | 5R01MH048578-05; PI: R.A. Stern; Combined Thyroid Hormone and Electroconvulsive Therapy; Total Direct Costs: $471,021 |
| 1992-1994 | 5R01MH043231-02; PI: J.J.Haggerty; Co-PI: R.A. Stern; Neuropsychiatric Aspects of Marginal Hypothyroidism; Total Direct Costs: $174,413 |
| 1992-1997 | 5P50MH033127; PI: A.J. Prange, Jr.; Neurobehavioral Assessment Core Director: R.A. Stern; Psychoendocrinology: Children and Adults, Total Direct Costs: $4,641,038 total project; $256,624 subproject [core] **role in project ended 7/93 due to leaving UNC* |

1992-1993 UNC University Research Council Pilot Project Award Grant; PI: R. A. Stern; Influence of L-triiodothyronine (T3) on Memory following Repeated Electroconvulsive Shock (ECS) in Rats; Total Direct Costs: $3000

1992-1993 The Psychological Corporation Contract; PI: R.A. Stern; Validation of the Microcog Computerized Neuropsychological Screening Test in HIV-Infected Gay Men; Total Direct Costs: $3600

1991-1992 UNC Medical Faculty Research Pilot Project Award Grant; PI: R.A. Stern; Physostigmine as a Psychodiagnostic Tool: The Effects of Physostigmine on Cognition, Mood, and Behavior in Normal Volunteers; Total Direct Costs: $3000

1990-1992 The Foundation of Hope for Research and Treatment of Mental Illness Pilot Project Award; PI: R.A. Stern; Neuropsychological Correlates of Pregnancy and the Early Puerperium; Total Direct Costs: $16,000

1990-1992 The North Carolina Foundation for Mental Health Research, Inc. Pilot Project Award; PI: R.A. Stern; Physostigmine as a Psychodiagnostic Tool: The Effects of Physostigmine on Cognition, Mood and Behavior; Total Direct Costs: $1200

1989-1991 The Foundation of Hope for Research and Treatment of Mental Illness Pilot Project Award; PI: R.A. Stern; Neuropsychological Correlates of Alterations in Thyroid State; Total Direct Costs: $26,317

1989-1994 R01MH044618; PI: D. Evans; HIV: Neuropsychiatric and Psychoimmune Relationships; Total Direct Costs: $1,293,290 (subcontract)

## CONGRESSIONAL TESTIMONY

June 25, 2014 Special Committee on Aging, United States Senate Hearing on "State of Play: Brain Injuries and Diseases of Aging"

## INVITED LECTURES AND PRESENTATIONS

*(Does not include frequent invited community lay lectures, including lectures for the MA/NH Chapter of the Alzheimer's Association)*

May 16, 1989 *Mood Disorders and Cerebrovascular Disease*. Department of Psychiatry, Rhode Island Hospital, Brown University School of Medicine, Providence, RI,.

Dec. 8, 1989 *Mood Disorders following Stroke*. Continuing Education Course, Greensboro (NC) Area Health Education Center,

January 4, 1990 *Assessment and Diagnosis of Post-Stroke Mood Disorders*. Continuing Education Course, Westboro (MA) State Hospital

March 3, 1990 *How to Design a Clinical Trial*. Third annual meeting of the Southern Association for Research in Psychiatry. Chapel Hill, NC.

May 25, 1990 *Assessment and Diagnosis of Post-Stroke Mood Disorders*. Whittiker Rehabilitation Center, Bowman-Gray Medical Center, Winston-Salem, NC

Aug 17, 31 1990 *Neurobehavioral Syndromes: Assessment and Diagnosis*. Continuing Education Workshop, Mountain Area Health Education Center, Asheville, NC

September 22, 1990 *Theories and Models of Human Cognition: Learning and Memory*. Advanced Workshops in Traumatic Brain Injury Rehabilitation, Peace Rehabilitation Center, Greenville, SC.

October 19, 1990 *Neurobehavioral Syndromes*. Continuing Education Course, Broughton Hospital, Morganton, NC

December 11, 1990 *Neuropsychology of Aging*. Continuing Education Workshop, Mountain Area Health Education Center, Asheville, NC

Feb 24-Mar 1, 1991 *States of Mind*. Series of lectures on brain-behavior relationships to selected educators during week-long seminar/retreat, The North Carolina Center for the Advancement of Teaching, Cullowhee, NC

March 1, 1991 *How to Design a Clinical Trial*. Psychiatry Grand Rounds, Bowman-Gray School of Medicine, Winston-Salem, NC

March 14, 1991 *Mood Disorders Following Stroke*. Psychiatry Grand Rounds, University of North Carolina School of Medicine, Chapel Hill, NC

July 26, 1991 *Normal and Pathological Aging: Neurocognitive Functioning*. Continuing Education Course, Broughton Hospital, Morganton, NC

September 12, 1991 *Neurobehavioral Functioning in a Non-Confounded Cohort of Asymptomatic HIV Seropositive Gay Men*. National Institute of Mental Health (NIMH) sponsored meeting, Neurobehavioral Findings in AIDS Research, Washington, DC

April 2, 1992. *Neuropsychiatric Disorders: Post-Stroke Depression and AIDS-Related Neurobehavioral Impairment*. Annual meeting of the North Carolina Speech and Hearing Association, Wilmington, NC,

September 18, 1992 *Neurobehavioral Syndromes*. Continuing Education Course, Johnston County (NC) Mental Health Center.

October 13, 1993 *Neurobehavioral Aspects of HIV Infection: Children and Adults.* Child Psychiatry Grand Rounds, Brown University School of Medicine, Providence, RI

December 14, 1993 *New Directions in Psychoneuroimmunology: Neuropsychiatric Correlates of HIV Infection.* Boston Behavioral Immunology Study Group, Boston, MA

March 3, 1994 *Neuropsychiatric Aspects of Thyroid Disorders*. Endocrinology Grand Rounds, Rhode Island Hospital, Providence, RI

March 23, 1994 *Post-Stroke Mood Disorders*. Neurology Grand Rounds, Brown University School of Medicine, Providence, RI

April 29, 1994 *Behavioral Abnormalities in Dementia*. Gerontology '94: Brain and Behavior, a conference sponsored by the Rhode Island Department of Elderly Affairs, Cranston, RI

June 3, 1994 *Differential Diagnosis of Psychiatric Disorders in Neurologic Patients: Assessment of Mood*. Applications of Neuropsychological Expertise to Clinical Practice in Psychology. Boston Department of Veterans Affairs Medical Center and Tufts New England Medical Center, Boston, MA

November 15, 1994 *Brain-Behavior Relationships: Appropriate Use and Benefits of Neuropsychological Evaluation*. Grand Rounds. Department of Medicine, Rhode Island Hospital, Providence, RI

November 17, 1994 *Neuropsychiatric Aspects of HIV and AIDS*. General Internal Medicine Research Seminar. Rhode Island Hospital, Providence, RI.

March 5, 1996 *Thyroid Disorders and Psychiatry*. Grand Rounds, St. Luke's Hospital, New Bedford, MA

March 26, 1996 *Neurobehavioral Aspects of Thyroid Disorders*. Lecture Series, Department of Endocrinology, University of Virginia School of Medicine, Charlottesville, VA

April 10, 1996 *Neuropsychiatric Aspects of Thyroid Disorders*. Psychiatry Lecture Series, Rhode Island Hospital, Providence, RI

April 19, 1996 *Neurobehavioral Aspects of Graves' Disease*. Keynote Address, Third Annual Meeting of the New England Thyroid Club, Westborough, MA

May 7, 1996 *Neuropsychological Evaluation of Executive Functioning*. "Neuropsychiatry for Clinicians" section of the *Psychiatry Update* session of the 149th Annual Meeting of the American Psychiatric Association, New York

June 19, 1997 *Assessment of Mood State and Depression in Neurodegenerative Disease*. Geriatric Case Conference and Journal Club. Butler Hospital

November 2, 1997 *The Thyroid Axis in Mood Disorders: Thoughts About Therapy* (Discussant). The 14th Annual George C. Ham Symposium (A Festschrift Celebrating the Career of Arthur J. Prange, Jr.). Chapel Hill, NC

December 19, 1997 *Neuropsychiatric Manifestations of HIV Infection*. Psychiatry Grand Rounds. Department of Veterans Affairs Medical Center. Providence, RI

May 5, 1998 *Quantifying the Qualitative Features of Rey-Osterrieth Complex Figure Performance: The Boston Qualitative Scoring System (BQSS)*. Continuing Education Lecture. Massachusetts Neuropsychological Society, Boston, MA

November 8, 1998 *Assessment of Mood State and Depression in Aphasia*. Aphasia: Assessment, Treatment, and Emotional Issues Symposium. 19th Annual Neurorehabilitation Conference on Traumatic Brain Injury and Stroke. (Sponsored by the Healthsouth Braintree Rehabilitation Hospital.) Cambridge, MA

April 27, 1999 *Assessment of Mood and Depression in Neurologic Disease.* Spring Lecture Series. Department of Communicative Disorders, University of Rhode Island, Kingston, RI

June 16, 1999 *The Use of Thyroid Hormone to Diminish the Cognitive Side Effects of Psychiatric Treatment*. Psychiatry Grand Rounds, McMaster University Medical Center, Hamilton, Ontario, Canada

Nov. 13, 1999 *Cognitive Rehabilitation: A Neuropsychological Perspective.* "Frontiers of Hope;" Annual National Meeting for Patients, Families, and Health Care Professionals; Brain Tumor Society, Providence, RI

March 1, 2000 *Neurobehavioral Functioning in Thyroid Disease*. Neurology Grand Rounds, Brown University School of Medicine, Rhode Island Hospital, Providence, RI

June 14, 2000 *Surviving a Brain Tumor: Understanding Changes in Thinking and Memory*. Featured speaker for an international educational teleconference for brain tumor survivors and family members, co-sponsored by the Brain Tumor Society, the American Brain Tumor Association, the National Brain Tumor Foundation, and Cancer Care, Inc.

December 14, 2000 *The Use of Thyroid Hormone to Diminish the Cognitive Side Effects of ECT and Lithium*. Geriatric Psychiatry Case Conference and Journal Club (CME activity), Butler Hospital, Providence, RI

April 29, 2002 *The Thyroid-Brain Connection: Neuropsychological and Behavioral Aspects of Thyroid Disorders*. Keynote Speaker, Psi Chi Induction Ceremony, Providence College, Providence, RI

September 21, 2002 *The Invisible Disability: Living with the Cognitive and Behavioral Changes from a Brain Tumor*. "Living Beyond a Brain Tumor 2002: A brain tumor symposium for patients, families, and healthcare professionals. Brain Tumor Society, Quincy, MA

December 5, 2002 *Neuropsychology of Thyroid Disease*. Behavioral Neuroscience Seminar Series. Brigham and Women's Hospital, Harvard Medical School, Boston, MA

June 16, 2003 *The Role of Thyroid Functioning in the Aging Brain and Dementia*. Seminar Series, Alzheimer's Disease Center, Boston University School of Medicine, Boston, MA

December 12, 2003 *The Neuropsychological Assessment Battery (NAB)*. Continuing Education Workshop, Colorado Neuropsychological Society, Denver, CO

January 23, 2004 *The Neuropsychological Assessment Battery (NAB)*. Continuing Education Workshop, Georgia Psychological Association, Emerald Pointe, GA,.

January 24, 2004 *The Neuropsychological Assessment Battery (NAB): Development and Psychometric Properties*. Continuing Education Workshop, 1st Professional Neuropsychology Weekend Conference, Coalition of Clinical Practitioners in Neuropsychology, Las Vegas, NV

January 24, 2004 *The Neuropsychological Assessment Battery (NAB): Administration, Scoring, and Interpretation*. Continuing Education Workshop, 1st Professional Neuropsychology Weekend Conference, Coalition of Clinical Practitioners in Neuropsychology, Las Vegas, NV

April 1, 2004 *The Utility of the Neuropsychological Assessment Battery (NAB) in the Evaluation of Adult Neurodevelopment Disabilities*. Continuing Education Workshop, Annual Conference of Contemporary Applications of Psychological Testing, Harvard Medical School, Boston, MA

October 8, 2004 *The Neuropsychological Assessment Battery (NAB).* Workshop presented at the annual meeting of the International Test Commission, Williamsburg, VA

December 8, 2004 *The Role of Thyroid Functioning in the Aging Brain and Dementia*. Psychiatry Grand Rounds, Edith Norse Veterans Administration Medical Center, Bedford, MA

February 5, 2005 *Neurobehavioral Functioning in Thyroid Disorders*. Continuing Education Seminar presented at the 32nd Annual Conference of the International Neuropsychological Society, Las Vegas, NV

March 15, 2005 *Thyroid-Brain Relationships in Aging and Dementia*. Neurology Grand Rounds, Boston University School of Medicine, Boston, MA

March 22, 2005 *Cognitive & Memory Changes in Aging & Dementia*. Mini-Med School, Boston University School of Medicine, Boston, MA

May 12, 2005 *Alzheimer's Disease Research in 2005: Where are we and Where are we Going?* Keynote Address, 5th Annual Boston Alzheimer's Partnership Legislative Breakfast. Dorchester, MA

June 7, 2005 *Alzheimer's Disease Research in 2005*. Keynote Address, "Alzheimer's Disease: Finding New Pathways," Berkshire Area Health Education Center Conference, Hancock, MA.

May 3, 2006 *Research Update.* Alzheimer's Association annual "Map Through the Maze," Marlboro, MA

June 4, 2006 *Advances in Alzheimer's Disease: Diagnosis and Care of Women*. 14th Annual Congress on Women's Health, Hilton Head, SC

January 16, 2007 *New Discoveries and Directions in Alzheimer's Disease Research and Care*. A Briefing for the Bipartisan Congressional Task Force on Alzheimer's Disease. The Rayburn House Office Building, Washington, DC,

May 2, 2007 *Research Update.* Alzheimer's Association annual "Map Through the Maze," Marlboro, MA

June 29, 2007 *Driving and Dementia*. Social Work Practice with Older Adults: A Continuing Education and Certificate Training Opportunity, Boston College Graduate School of Social Work, Boston, MA

February 28, 2008 *Medical Advances in Research and Treatment*, Keynote Address for the Dementia/Alzheimer's Disease Training Session, Massachusetts Assisted Living Facilities Association (MassALFA), Waltham, MA.

May 14, 2008 *Driving and Dementia: Balancing Personal Independence and Public Safety.* Alzheimer's Association annual "Map Through the Maze," Marlboro, MA

June 27, 2008 *Elderly Drivers: A Difficult Balance of Personal Independence & Public Safety*. Women's Health and Older Adult Conference, Nurse Practitioner Associates Continuing Eduction (NPACE), Falmouth, MA

March 6, 2009 *Chronic Traumatic Encephalopathy: Progressive Tauopathy following Repetitive Concussion in Athletes*, Pediatric Neurology Grand Rounds, Boston University School of Medicine

May 13, 2009 *Research Update.* Alzheimer's Association annual "Map Through the Maze," Marlboro, MA

October 2, 2009 *Chronic Traumatic Encephalopathy and the Athlete*. Concussion and the Athlete CME Conference, Foxboro, MA

October 7, 2009 *Alzheimer's Disease Research Update*. Massachusetts Councils on Aging Annual Conference, Sturbridge, MA

November 12, 2009 *Recognizing, Diagnosing, and Treating Alzheimer's Disease*. Pri-Med East CME Conference, Boston, MA

November 13, 2009 *Alzheimer's Disease Research Update 2009: Where are we Now and Where are we Going?* Keynote Address at the 12th Annual Alzheimer's Awareness Conference, Alzheimer's Services of Cape Cod and the Islands, Mashpee, MA

March 17, 2010 *Chronic Traumatic Encephalopathy*. Briefing to the Congressional Brain Injury Task Force, Washington, DC

June 23, 2010 *Chronic Traumatic Encephalopathy and Repetitive Brain Trauma in Athletes*, Institute of Medicine Committee on Nutrition, Trauma and the Brain, Washington, DC

October 1, 2010 *Long-Term Effects of Repetitive Concussive and Subconcussive Brain Trauma: Chronic Traumatic Encephalopathy (CTE).* 2010 Head Trauma and the Athlete CME Conference, Waltham, MA

October 28, 2010 *The Role of Thyroid Functioning in the Aging Brain*. Psychiatry Grand Rounds, Edith Norse Veterans Administration Medical Center, Bedford, MA

November 6, 2010 *Head Games: Chronic Traumatic Encephalopathy Following Repetitive Brain Trauma in Athletes*. Keynote Address at the 31st Annual Braintree Neurorehabilitation Conference, Cambridge, MA

November 18, 2010 *Alzheimer's Disease 2010: A Time for Hope*, Keynote Address for the Dementia/Alzheimer's Disease Training Session, Massachusetts Assisted Living Facilities Association (MassALFA), Hopkinton, MA.

February 2, 2011 *Chronic Traumatic Encephalopathy: Long-term Consequences of Repetitive Brain Trauma*. Continuing Education Course at the 39th Annual Meeting of the International Neuropsychological Society, Boston, MA.

March 19, 2011 *Chronic Traumatic Encephalopathy*, Keynote Speaker, **"**New Frontiers in Traumatic Brain Injury: Update 2011 Essential Information for the Clinical Neurologist," sponsored by the Massachusetts Neurologic Association and the Massachusetts Medical Society, Boston, MA.

March 25, 2011 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Impact of Repetitive Brain Trauma in Athletes*, Luncheon Keynote Address, American Neuropsychiatric Association, Denver, CO

April 28, 2011 *Sports Concussions: The Hidden Risks*, Invited Speaker for Brain Trauma Symposium, The Neuroscience Institute at the University of Tennessee Health Science Center, Memphis, TN.

April 29, 2011 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes.* Neurology Grand Rounds, University of Tennessee Health Sciences Center.

May 11, 2011 *Driving and Dementia: A Difficult Balance of Personal Independence and Public Safety*. Alzheimer's Association annual "Map Through the Maze," Marlboro, MA.

August 5, 2011 *Chronic Traumatic Encephalopathy: The Synergy of Science and Journalism in Creating Culture Change*. Invited Lecture at the Annual Meeting of the American Psychological Association, Washington, DC.

September 24, 2011 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Keynote Speaker for the Baptist Hospital Annual Brain Injury Symposium, Coconut Grove, FL.

October 19, 2011 *Head Games: Chronic Traumatic Encephalopathy and the Long Term Effects of Repetitive Brain Trauma in Athletes*. Grand Rounds Speaker, Beth Israel Deaconess Medical Center-Needham, Needham, MA

October 20, 2011 Panelist, "Alzheimer's Forum," WBUR (NPR), Boston, MA

November 5, 2011 *Alzheimer's disease: Research Updates on Diagnosis, Treatment and Prevention*. Keynote Speaker, Alzheimer's Association, Chicopee, MA

January 19, 2012 *Chronic Traumatic Encephalopathy*. Invited Lecture, Boston Society of Neurology and Psychiatry, Boston, MA

March 5, 2012 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Invited Speaker, Boston Surgical Society, Boston, MA

March 28, 2012 Moderator, Annual Alzheimer's Association (MA/NH Chapter) Research Day, Lexington, MA

April 11, 2012 *Alzheimer's Disease 2012: A Reason for Hope*. Keynote Speaker, Annual Research Program, Alzheimer's Association, Worcester, MA

April 17, 2012 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Grand Rounds Speaker, Good Samaritans Medical Center, Brockton, MA

April 26, 2012 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Invited Speaker, CME Series, Vista Health System, Waukegan, IL

April 28, 2012 *Alzheimer's Disease: Research Updates on Diagnosis, Treatment and Prevention*. Keynote Speaker, Alzheimer's Partnership, Andover, MA

May 16, 2012 *Driving and Dementia: A Difficult Balance of Personal Independence and Public Safety*. Alzheimer's Association annual "Map Through the Maze," Marlboro, MA.

May 24, 2012 *Chronic Traumatic Encephalopathy: Long-Term Effects of Repetitive Brain Trauma in Athletes and the Military*. Invited Speaker, Alzheimer's Disease: Update and Research, Treatment, and Care, Annual Conference sponsored by the Shiley-Marcos Alzheimer's Disease Research Center, University of California, San Diego, San Diego, CA

June 13, 2012 *Head Games: Long-term Consequences of Repetitive Brain Trauma*. Keynote Speaker, Traumatic Brain Injury Conference, Sunnybrook Hospital, Toronto, Canada

June 15, 2012 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Keynote Speaker, "Effects of Multiple ABI—Preventing Further Injury" Conference, Brain Injury Association, London, Ontario, Canada

August 3, 2012 *Chronic Traumatic Encephalopathy*. Plenary Speaker, Annual Meeting of the American Psychological Association, Orlando, FL

October 1, 2012 *Clinical Presentation of CTE : Combining Clinical and Biomarker Data for Accurate Diagnosis*. Invited Speaker (and Conference Co-Chair), Inaugural Chronic Traumatic Encephalopathy (CTE) Conference, Jointly Sponsored by Boston University and the Lou Ruvo Center for Brain Health, Las Vegas, NV

October 13, 2012 *Differentiating chronic traumatic encephalopathy from Alzheimer's disease and other neurodegenerative conditions*. Invited Speaker, Fred Kavli Public Symposium, Society for Neuroscience, New Orleans, LA

October 26, 2012 *Chronic Traumatic Encephalopathy: Clinical Presentation*. Invited Speaker (and Conference Co-Chair), 2012 Brain Trauma and the Athlete Conference, CME Conference Sponsored by Boston University School of Medicine, Waltham, MA

October 29, 2012 *Understanding the Continuum of MCI due to AD & Dementia due to AD*. Invited Speaker, Aging or Alzheimer's Disease? How to Detect and Treat Memory Loss in the Primary Care Setting, CME Conference by Boston University Alzheimer's Disease Center, Waltham, MA.

November 10, 2012 *Alzheimer's Disease 2012: Reasons for Hope*. Keynote Speaker, NH Alzheimer's Association Conference: Care to Cure, Concord, NH.

December 1, 2012. *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Invited Speaker, 59th Annual Meeting of the Massachusetts Chapter of the American College of Surgeons, Boston, MA

December 5, 2012 *Clinical Presentation of CTE*: Invited Speaker, 1st NIH Workshop on the Neuropathology of Chronic Traumatic Encephalopathy, Bethesda, MD.

December 11, 2012 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*. Invited Speaker, Clinical Neurosciences Grand Rounds, Boston University School of Medicine, Boston, MA

March 6, 2013 *Clinical Presentation of Chronic Traumatic Encephalopathy*, Invited Speaker, 3rd Traumatic Brain Injury Conference, Arlington, VA

March 17, 2013 *Efforts toward earlier Alzheimer's Treatment*, Invited Panelist, Health Journalism 2013 (American Health Care Journalists), Boston, MA

April 17, 2013 *Head Games: Chronic Traumatic Encephalopathy and the Long Term Consequences of Repetitive Brain Trauma in Athletes*. Invited Webinar Speaker, Rose® Webinar Series.

May 4, 2013 *CTE and Late Life Issues*, Invited Speaker, International Sports Concussion Symposium, Minneapolis, MN

May 10, 2013 BU A Leader in Sports-Related Head Injury: Long Term Consequences, Invited Speaker, Medical Grand Rounds, Boston University School of Medicine, Boston, MA

May 13, 2013 *Clinical Presentation and Diagnosis of Chronic Traumatic Encephalopathy*, Invited Speaker, World Brain Mapping Conference, Baltimore, MD

May 31, 2013 *Chronic Traumatic Encephalopathy*, Invited Speaker, "Dementia: A Comprehensive Update" Continuing Medical Education Course, Harvard Medical School, Boston, MA.

June 3, 2013 *The Future of Contact Sports: Concussions May Be the Tip of the Iceberg*. Invited Panelist and Speaker, The German Center for Research and Innovation and Ludwig-Maximilians-Universität München, New York, NY

June 10, 2013 *Clinical efficacy – how do we observe a potential treatment effect?* Invited Speaker, Workshop: Prevention of Alzheimer's Disease – What will it take? (New York Academy of Sciences), New York, NY

June 20, 2013 *CTE: Point/Counterpoint Presentation*, Invited Speaker, 11th Annual American Academy of Clinical Neuropsychology Conference, Chicago, IL

October 24, 2013 *Concussion and Action Points* Symposium, The Association of Ringside Physicians 2013 Annual Medical Seminar, Las Vegas, NV

November 12, 2013 *Unmet Needs in Neurodegeneration: Focus on Endpoints*, Keynote Speaker, 2nd Annual Meeting of the Coalition Against Major Diseases, Bethesda, MD

November 12, 2013 *Chronic Traumatic Encephalopathy: Public Health Consequences of Repetitive Brain Trauma in Sports*, Keynote Speaker, 2nd Annual Research Day, Boston University School of Public Health, Boston, MA

December 5, 2013 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*, Grand Rounds, Department of Neurology, Medical University of South Carolina, Charleston, SC

January 17, 2014 *Brain Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma*, Distinguished Lecturer for Grand Rounds, Department of Physical Medicine and Rehabilitation, Harvard Medical School, Spaulding Rehabilitation Hospital, Boston, MA

January 29, 2014 *Clinical Presentation and Diagnosis of Chronic Traumatic Encephalopathy: What We Think We Know and What We Need to Know Next*, Invited Lecture, C4CT Summit, United Nations, New York, NY

January 30, 2014 *Brain Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma*, Visiting Speaker, Mayo Clinic, Scottsdale, AZ

March 19-23, 2014 *Chronic Traumatic Encephalopathy*, Invited Symposium Organizer and Speaker, 10th World Congress on Brain Injury, San Francisco, CA

March 28, 2014 *Head Games: Chronic Traumatic Encephalopathy and the Long-Term Consequences of Repetitive Brain Trauma in Athletes*, Invited Speaker, Grand Rounds, Department of Medicine, Tufts Medical School, Boston, MA

April 16-17, 2014 *Chronic Traumatic Encephalopathy Clinical Presentation and Biomarkers: What We Know and What We Do Not Know*, Invited Speaker, 4rd Traumatic Brain Injury Conference, Washington, DC

May 2, 2014 *Chronic Traumatic Encephalopathy: What We Think We Know and What We Need to Know*, Plenary Speaker, 8th Annual National Summit on Sports Concussion, Los Angeles, CA

May 13, 2014 *Brain Games: Chronic Traumatic Encephalopathy and the Long Term Consequences of Repetitive Concussive and Subconcussive Brain Trauma in Athletes*. Keynote Speaker, NYC MedTech Program, New York, NY

May 30, 2014 *Chronic Traumatic Encephalopathy*, Invited Speaker, "Dementia: A Comprehensive Update" Continuing Medical Education Course, Harvard Medical School, Boston, MA.

June 30, 2014 *Overview of recent/current research in clinical endpoint development*, "Pre-Dementia Clinical Outcome Assessment Tool (pCOA) Stage 2 Meeting, Coalition Against Major Diseases, Bethesda, MD

July 31, 2014 *Brain Trauma Leading to Alzheimer's Disease and Chronic Traumatic Encephalopathy: What We Know and What We Need to Know*, Invited Lecture, C4CT Summit, United Nations, New York, NY

November 12, 2014 *Brain Games: What We Now Know and What We Must Know Next about Chronic Traumatic Encephalopathy*, Opening Keynote Address, 2014 Annual Conference of the National Academy of Neuropsychology, Puerto Rico.

## MEDIA EXPERIENCE AND APPEARANCES:

Media Training: Fleishman-Hillard International Communications, New York, February 2009

Print Media: Interviewed and quoted in national and international newspapers and news magazines, including the New York Times, Washington Post, Boston Globe, LA Times, Time Magazine, USA Today, and others.

Broadcast Media: Interviews on ABC World News Tonight, CBS Evening News, NBC Nightly News, Good Morning America, Nightline, CNN, Fox News, National Public Radio, ESPN, CTV's Canada AM, ABC Radio Australia, ABC TV Australia, and numerous local affiliate radio and television news interviews.

Documentaries: Appeared in Feature Length Film Documentary, "I Remember Better When I Paint" (2009), French Connection Films and the Hilgos Foundation.

Appeared in Feature Length Film Documentary, "Head Games" (2012), Variance Films, Directed by Steven James.

Appeared in Feature Length Television Documentary, "League of Denial" (2013), *Frontline*, Public Broadcasting System (PBS), Directed by Michael Kirk.

## ORIGINAL, PEER REVIEWED ARTICLES:

*(Past and present students, fellows, and other trainees italicized)*

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## RESEARCH PUBLICATIONS WITHOUT NAMED AUTHORSHIP

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## CASE REPORTS, REVIEWS, CHAPTERS, EDITORIALS AND OTHER PUBLICATIONS

### Proceedings of Meetings & Invited Papers

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**Textbook Chapters**

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**Letters and Other Publications**

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   - NAB Language Module
   - NAB Memory Module
   - NAB Spatial Module
   - NAB Executive Functions Module
   - NAB Auditory Comprehension Test
   - NAB Categories Test
   - NAB Design Construction Test
   - NAB Digits Forward/Digits Backward Test
   - NAB Mazes Test
   - NAB Naming Test
   - NAB Numbers and Letters Test
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