

THE NEUROPSYCHOLOGICAL BATTERY OF THE UDS - AN UPDATE

SANDRA WEINTRAUB

On behalf of the ADC Clinical Task Force

ADC Clinical Task Force Members

Center Directors and Core Leaders

John Morris: Chairman

Sandra Weintraub: NeuroPsy

Helena Chui

Jeffrey Cummings

Charles DeCarli

Steven Ferris

Douglas Galasko

Neill Graff-Radford

Elaine Peskind

David Salmon

Ex Officio

Richard Mayeux

NIA

Marcelle- Morrison-Bogorad

Creighton Phelps

Nina Silverberg

NACC

Walter Kukull

***Thanks to all Center Directors,
Clinical and Data Core leaders,
and staff for feedback and
suggestions***



Guiding Principles

- 1. Focus on domains useful in tracking trajectory from normal aging to MCI to AD and AD stages**
- 2. Maintain continuity with tests used**
- 3. Minimize burden on centers and research participants (time, effort)**
- 4. Overlap with LOAD/ADNI**



METHODS

**Surveyed ADC tests, forms, populations,
frequency of visits**

Identified most common practices

Consulted with LOAD, ADNI

Created administration and scoring manual



METHODS

Conducted meeting November 2005 to review administration/scoring protocols

Revisions made to manual and tests

Collected data: frozen September 2007



Table 1. NACC Database search of test measures used by 29 ADCOs

Used by ³ 80% of centers (N)	Used by < 40% of centers (N<12)
<p>Category Fluency (Animals) (28)</p> <p>Boston Naming Test (20, 30, 60 items) (26)</p> <p>MMSE (Spell W-O-R-L-D backwards) (26)</p> <p>Trail Making Tests (Part A or B) (26)</p>	<p>Blessed Inf-Mem-Conc</p> <p>California Verbal Learning Test</p> <p>Mattis Dementia Rating Scale</p> <p>Global Deterioration Scale</p> <p>New Adult Reading Test</p> <p>Alzheimer's Disease Assessment Scale</p> <p>Lawton-Brody Activities of Daily Living</p> <p>Beck Depression Inventory</p> <p>Hopkins Verbal Learning Test</p> <p>Buschke Selective Reminding Test</p> <p>Rey Auditory Verbal Learning Test</p> <p>Telephone Interview of Cognitive State</p> <p>Fuld Object Memory Test</p> <p>Modified Mini Mental State (3MS)</p> <p>Center for Epidemiologic Studies- Depression Scale</p>
<p>Used by ³ 60-79% of centers (N)</p> <p>CDR-Global Score (24)</p> <p>Letter Fluency Test (23)</p> <p>Digit Span (WAIS-R) (21)</p> <p>WMS (original, R or III) (21)</p> <p>Geriatric Depression Scale (19)</p> <p>Clock Drawing Test (19)</p>	
<p>Used by 40-59% of centers (N)</p> <p>CERAD Word List Learning (17)</p> <p>Blessed Dementia Scale (16)</p> <p>Block Designs (WAIS, WAIS-R, WAIS-III) (16)</p> <p>Digit Symbol (16)</p> <p>Neuropsychiatric Inventory (15)</p> <p>Visual Reproduction (WMS,WMS-R,WMS-III) (14)</p> <p>CERAD Neuropsychological Battery (13)</p>	



UDS Neuropsychological Battery

DOMAIN/FUNCTION	Instrument
Dementia Severity	Mini Mental State Examination
Attention	Digit Span Forward (WMS-R) Digit Span Backward (WMS-R)
Processing Speed	Digit Symbol (WAIS-R) Part A, Trail Making Test
Executive Function	Part B, Trail Making Test
Memory	Logical Memory, Story A (WMS-R) Immediate Recall Delayed Recall
Language Verbal Fluency Naming	Animal list generation Vegetable list generation Boston Naming Test (30 odd items)



ADC REFERRAL PATTERNS FOR CLINICALLY COGNITIVELY NORMAL

36% referred by friend or relative

**21% clinics (geriatrics, memory disorders,
other medical specialty)**

14% ADC solicitation

4% Non ADC media

25% Other and Unknown



INITIAL DATA ANALYSIS

TOTAL SUBJECTS WITH UDS DATA= 11,287

CRITERIA FOR INCLUSION

Clinically Cognitively Normal Subjects

Clinical Dementia Rating=0

FAQ=0

Clinician judgment=No Dementia

TOTAL= 3,268

Descriptive statistics by:

Gender

Age

Education

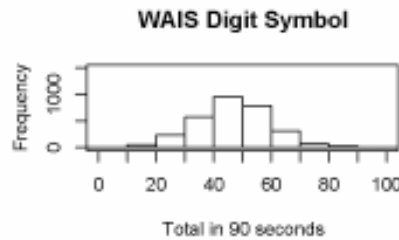
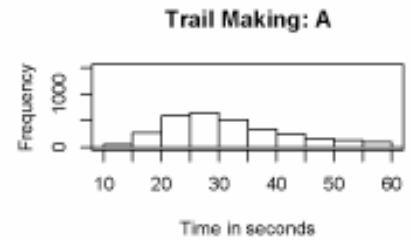
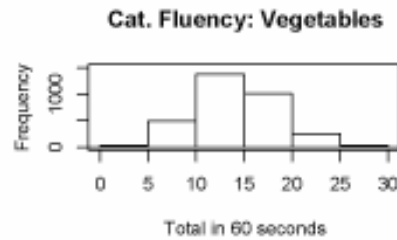
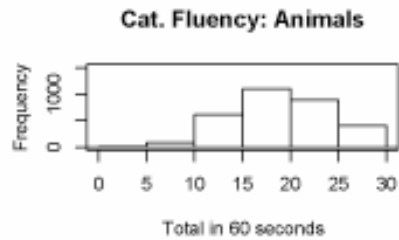
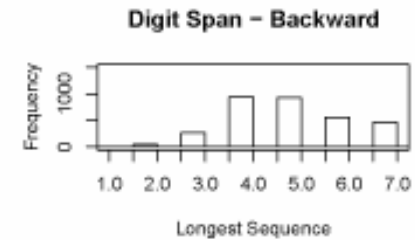
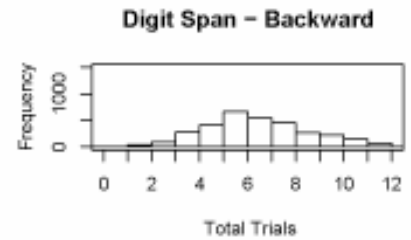
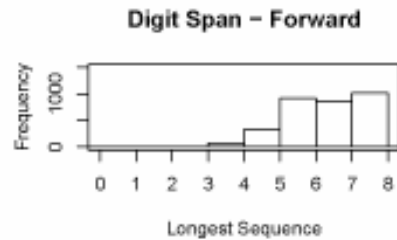
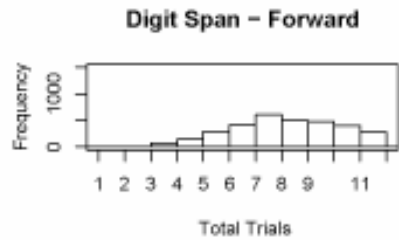
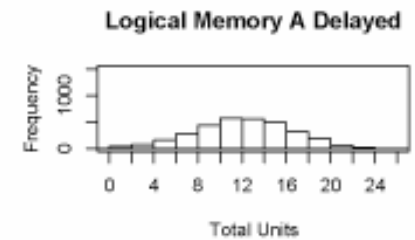
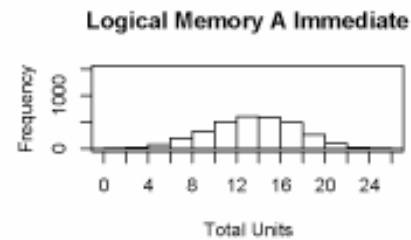
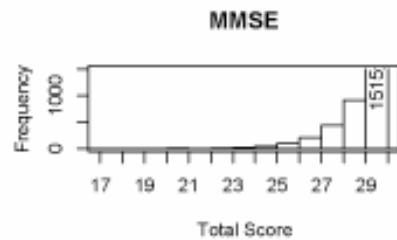
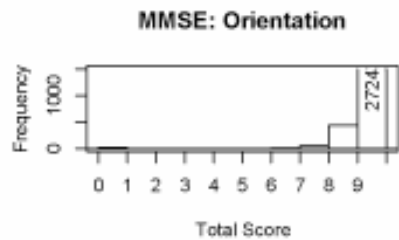
**Table 3. Sample Distribution By Gender, Age and Education**

Age	Education (Years)	Male	Female	N
< 60 years	Total	87	195	282
	² 12	12	26	38
	13-15	13	39	52
	16	31	51	82
	17 +	31	79	110
60-69 years	Total	252	584	836
	² 12	42	109	151
	13-15	45	148	193
	16	56	113	169
	17 +	109	214	323
70-79 years	Total	458	845	1303
	² 12	59	195	254
	13-15	69	208	277
	16	133	182	315
	17 +	197	260	457
80-89 years	Total	277	449	726
	² 12	66	119	185
	13-15	39	96	135
	16	82	108	190
	17 +	90	126	216
90 + years	Total	45	76	121
	² 12	12	27	39
	13-15	7	21	28
	16	15	12	27
	17 +	11	16	27
GRAND TOTAL		1119	2149	3268

Courtesy Nate Mercaldo MS

ADC DIRECTORS MEETING 04/

SCORE DISTRIBUTIONS BY TEST





**LINEAR REGRESSION MODELS TO
EXAMINE GENDER, AGE, EDUCATION**

ALL 3 INFLUENCE SCORES

NEED SEPARATE NORMS BASED ON EACH

MORE SOPHISTICATED MODELS

USE OVERLAPPING AGE RANGES?



FUTURE DIRECTIONS

ANALYZE PATIENT DATA

LONGITUDINAL STUDIES

VIDEO TO STANDARDIZE ADMINISTRATION

METHODS FOR ESTABLISHING NORMS

MORE MINORITY SUBJECTS NEEDED

ADD MEASURES SENSITIVE TO NON AD DEMENTIA

ASPIRATION?  CONSIDER MOVING TO COMPUTERIZED 
TESTS  VALIDATED AGAINST CURRENT BATTERY 

THE END

The text 'THE END' is rendered in a bold, sans-serif font. Each letter is filled with a different color from a rainbow spectrum: 'T' is pink, 'H' is red, 'E' is orange, 'E' is yellow, 'E' is green, 'N' is blue, and 'D' is purple. The letters have a slight 3D effect, with white outlines and soft shadows cast to the left and slightly forward, giving them a sense of depth against the dark blue background.