

Young Onset Dementia: How Is Cognitive Decline Measured And Differentiated From Normal Aging?

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Social Security Administration
Compassionate Allowance Outreach Hearing on
Early-Onset Alzheimer's and Related Dementias
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Cognitive Function “Domains”

- **Attention, concentration**
- **Language (understanding oral and written words, speaking, reading, writing)**
- **Episodic memory: recall of recent events**
- **Reasoning, decision-making**
- **Executive functions (planning, organization)**
- **Visuospatial skills (perceiving spatial relations, recognizing objects, faces, drawing, constructing designs)**

Cognitive Functions: Brain Circuits

- **Each system has a unique brain circuit**
- **Neuropsychological tests are sensitive to injury in different circuits of the brain**
- **Failure on a test points to damage in specific brain circuits**
- **“Failure” is judged on the basis of age, level of education, opportunity to learn=
NORMATIVE COMPARISONS**

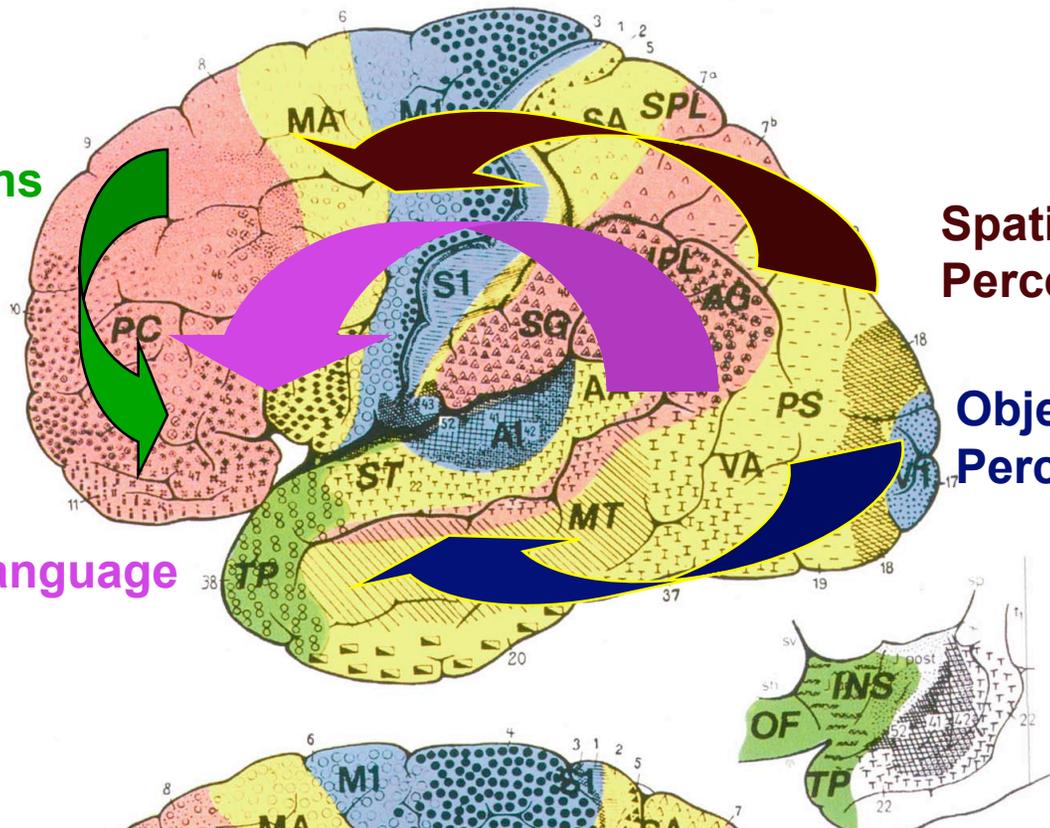
BRAIN CIRCUITS FOR COGNITION "JOB DESCRIPTIONS"

Executive Functions
Social Behavior

Spatial Perception

Object Perception

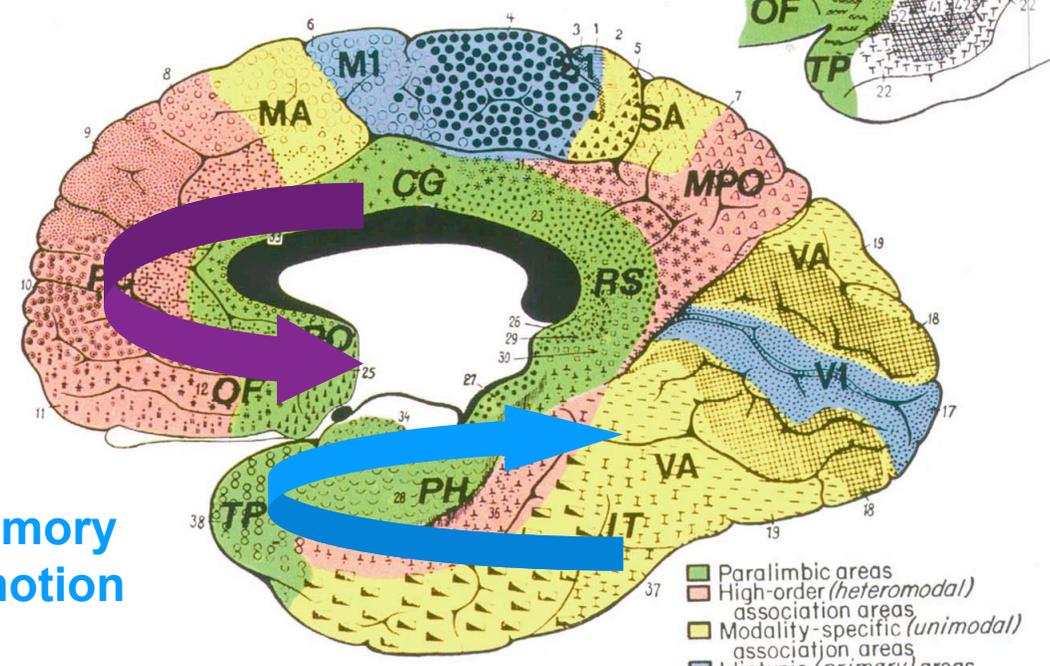
Language



Mesulam 1985, 2000

Motivation

Memory
Emotion



- Paralimbic areas
- High-order (*heteromodal*) association areas
- Modality-specific (*unimodal*) association areas
- Idiotypic (*primary*) areas

In the absence of readily available biomarkers....

Neuropsychological Test Scores Provide

- **The only Objective/Quantifiable Marker Of Dementia**
- **Method Of *Early* Detection**
- **A Measure Of Change and Rate of Decline**
- **Support For Differential Diagnosis (memory vs language vs executive functions)**

Honolulu News, Pacific Business News

Thursday, June 23, 2005

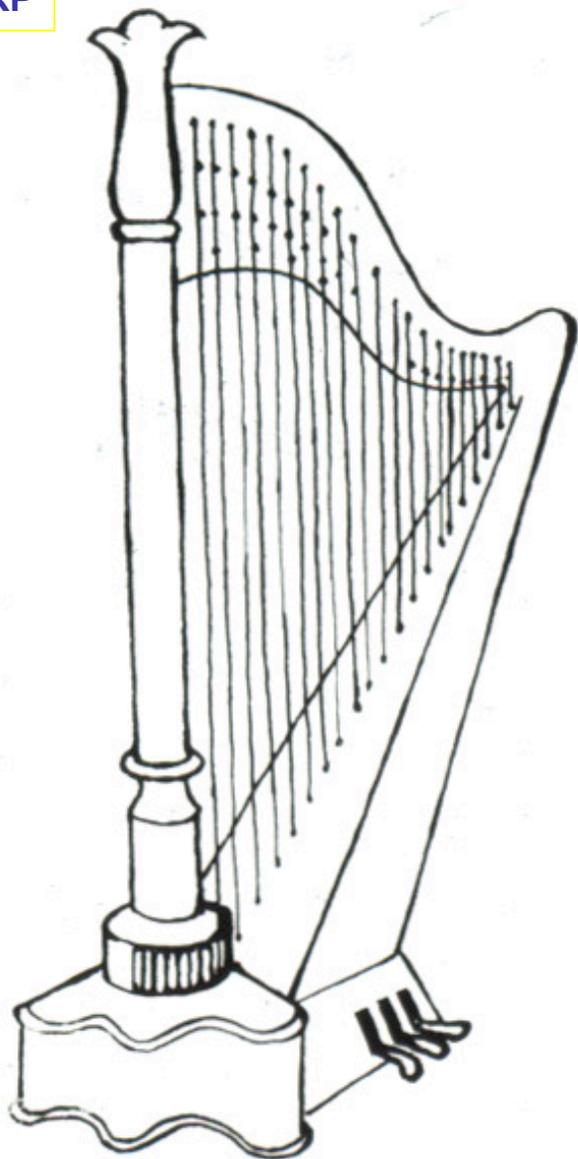
Cadman resigns as med school dean

Pacific Business News (Honolulu)

SAMPLE LETTER OBTAINED FROM PPA Patient, age 63

I will live with upstairs, bedroom, my office, **quest** room (I have exercise and dumb-bells with 30 minutes), two bathrooms, walking-in-closet, and two cars garage. I ran Wailea neighborhood 2.5 miles, between 20-30 minutes my biking garage. I will put into my porch washing machine and dryer my clothes per week. I would be house cleaning.

HARP



TARGET WORD = HARP

Errors in Word Production and Formation: Paraphasias

VERBAL(aka Semantic):

"Violin"

"Chair" (unrelated)

PHONEMIC:

"Hart"

NON WORD:

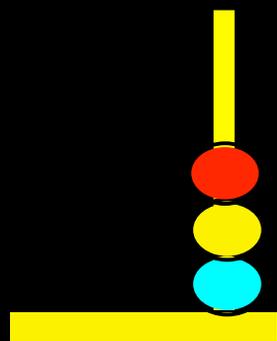
"Splik"

CIRCUMLOCUTION:

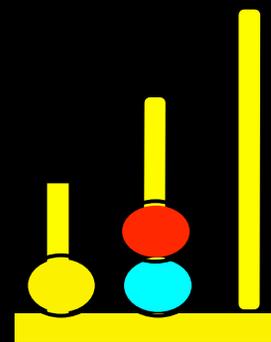
"You make music with it."

Boston Naming Test
Kaplan, Goodglass,
Weintraub, 1983, 2000

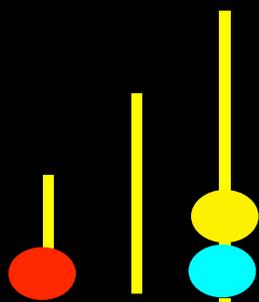
TOWER OF LONDON



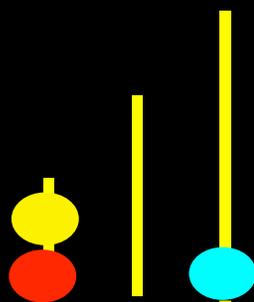
START



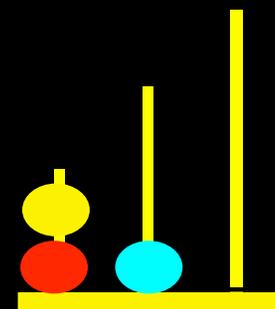
FINISH IN 6 STEPS



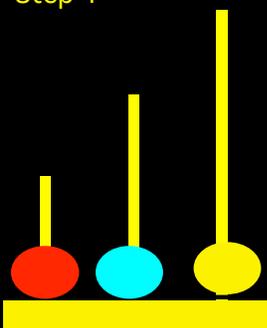
Step 1



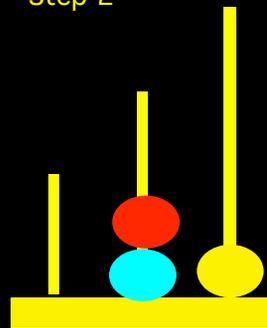
Step 2



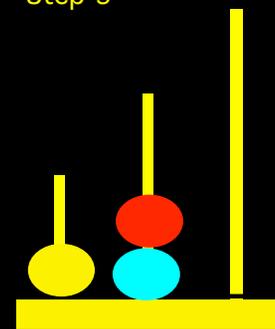
Step 3



Step 4



Step 5



Step 6

NIH TOOLBOX

Project Team Members

National Institute on Aging (NIA)

National Institute on Mental Health (NIMH)

National Institute on Drug Abuse (NIDA)

National Institute on Neurological Disorders & Stroke (NINDS)

National Institute on Environmental Health Sciences (NIEHS)

National Institute on Deafness and Other Communicative Disorders (NIDCD)

National Eye Institute (NEI)

National Institute on Child Health and Human Development (NICHD)

National Institute of Nursing Research (NINR)

National Institute on General Medical Sciences (NIGMS)

Office of Behavioral and Social Sciences Research (OBSSR)

National Center on Complementary and Alternative Medicine (NCCAM)

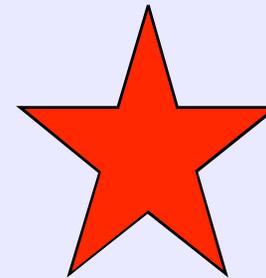
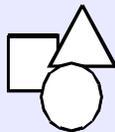
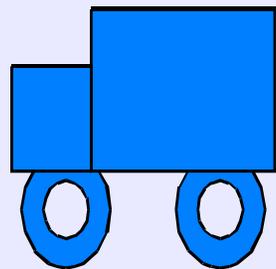
National Institute on Alcohol Abuse and Alcoholism (NIAAA)

National Center on Research Resources (NCRR)

NIH TOOL BOX

Dimensional Change Card Sort

P. Zelazo, Nature Protocols, 2006



Shape Trial

Color Trial

Activities of Daily Living in EARLY STAGE PPA vs BvFTD vs AD

LEVEL OF IMPAIRMENT MEASURED BY THE ADLQ

