Welcome

Health and Retirement Study Data on Cognition

Webinar Agenda
- Part I: HRS Cognitive Functioning Data Resources Overview
- Q&A
- Part II: Tour of the HRS Cognition Documentation Website
- Q&A

THE GERONTOLOGICAL SOCIETY OF AMERICA

Webinar Speakers

Amanda Sonnega, PhD
Associate Research Scientist
Survey Research Center
Institute for Social Research
University of Michigan

Lindsay Ryan, PhD
Assistant Research Scientist
Institute for Social Research
University of Michigan

HRS HEALTH AND RETIREMENT STUDY

THE GERONTOLOGICAL SOCIETY OF AMERICA

Quick Audience Poll

- Please tell us who you are:
  - Academia
  - Industry
  - Government
  - Medical Practice
  - Other

THE
GERONTOLOGICAL
SOCIETY OF AMERICA

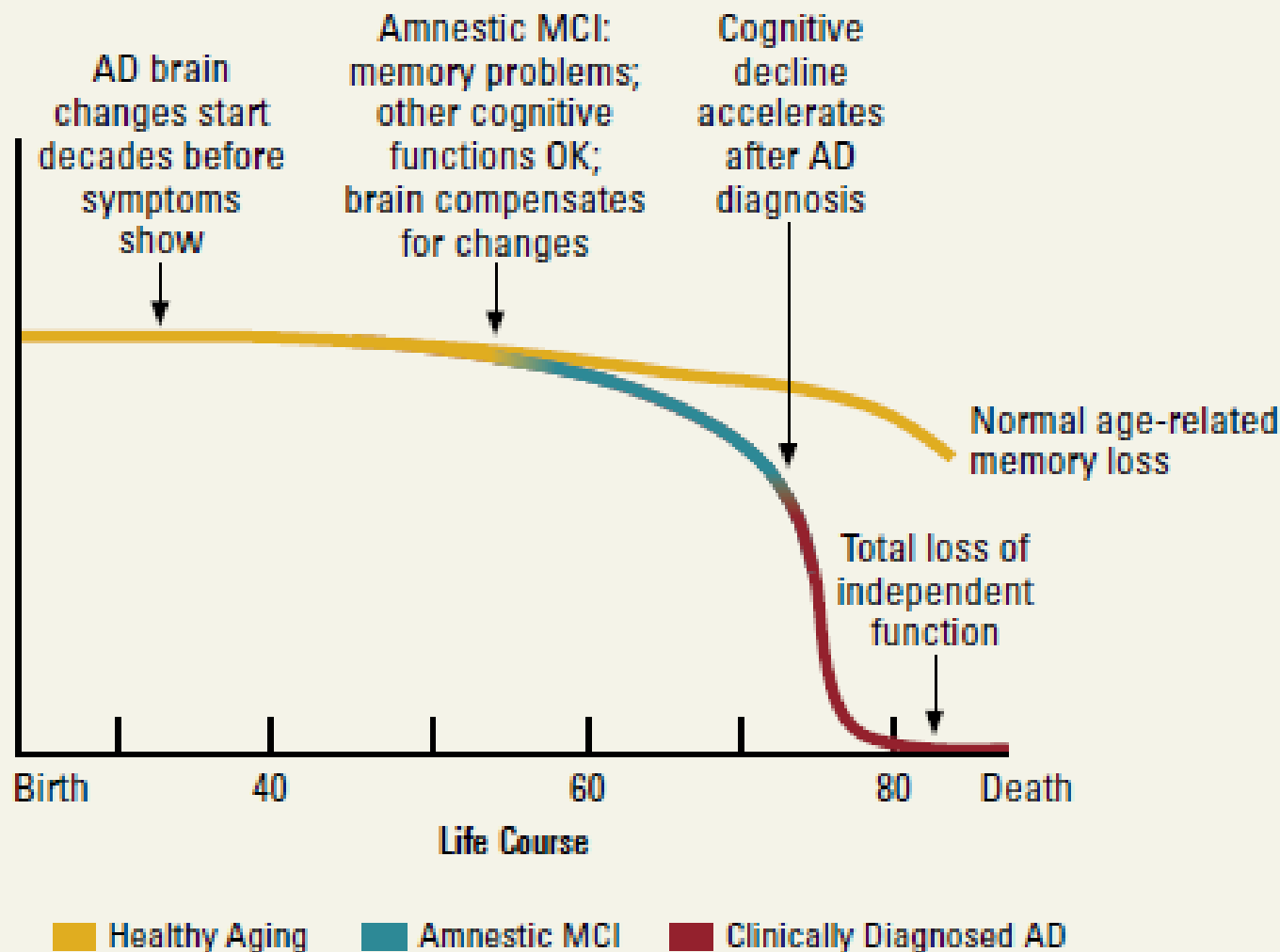# HEALTH AND RETIREMENT STUDY: DATA ON COGNITION

Amanda Sonnega, PhD
Lindsay Ryan, PhD
GSA Webinar
March 27, 2018

HRS | HEALTH AND RETIREMENT STUDY

LIFE COURSE TRAJECTORIES IN NORMAL VERSUS PATHOLOGICAL COGNITIVE AGING

AD brain changes start decades before symptoms show

Amnestic MCI: memory problems; other cognitive functions OK; brain compensates for changes

Cognitive decline accelerates after AD diagnosis

Normal age-related memory loss

Total loss of independent function

Birth 40 60 80 Death

Life Course

Healthy Aging   Amnestic MCI   Clinically Diagnosed AD

HRS

HRS SHOWS RATES ARE DECLINING

Research

JAMA Internal Medicine | Original Investigation

A Comparison of the Prevalence of Dementia in the United States in 2000 and 2012

Kenneth M. Langa, MD, PhD; Eric B. Larson, MD, MPH; Eileen M. Crimmins, PhD; Jessica D. Faul, PhD; Deborah A. Levine, MD, MPH; Mohammed U. Kabeto, MS; David R. Weir, PhD

- Two HRS cohorts ages 65+

- Dementia prevalence 2000=11.6%, 2012=8.8%

- Education increased from 11.8 to 12.7 years; more education associated with lower risk of dementia

- Increases in cardiovascular risk profile (hypertension, diabetes, and obesity) 2000-2012

- Conclusion: more research needed!

HRS

DATA ON COGNITION IN THE HRS

Three main sources:

- Range of measures in the core interview

- Supplementary clinical study of dementia

  o Aging, Demographics, and Memory Study (ADAMS)

- Healthy Cognitive Aging Project

  o Currently finishing data collection

We'll review and show you where to find relevant documentation for each of these data sources

HRS

COGNITION DATA IN THE CORE

HRS

PRACTICAL CONSIDERATIONS IN MEASURE SELECTION

- Limited interview time

- Multiple survey interviewers

- Telephone and in-person computer-assisted interviews

- Few existing measures designed for large-scale national surveys with older adults

- Data users from different disciplines have different needs and research questions (hence range of generic measures)

- Need for self and proxy measures

HRS

COGNITION MEASURES IN HRS CORE: SECTION D

- **Immediate and Delayed Free Recall**
  - List of 10 nouns for a possible score of 0-10 (1998-2016)
  - 20-noun list in 1992 and 1994

- **Serial 7s**
  - A working memory and mental processing task in which respondents count backwards from 100 by 7 for a total of five trials for a possible score of 0-5

- **Count Backwards**
  - From 10 and 86 (10 numbers)

- **Vocabulary** (crystallized knowledge)
  - Define 5 words from one of two sets:
    - repair, fabric, domestic, remorse, plagiarize
    - conceal, enormous, perimeter, compassion, audacious

- **Mental Status**
  - Measures (with a possible combined score of 0-10)
    - Name the U.S. president and vice president by last name (>65 yrs)
    - Name two described objects (scissors and cactus) (>65 yrs)
    - Time orientation – report the day's date (>65 yrs)

HRS

ADDITIONAL COGNITION MEASURES IN HRS CORE

- **Self-Rated Memory** (Section D)
  - How would you rate your memory at the present time? Would you say it is excellent, very good, good, fair, or poor?
  - Compared with (previous wave interview), would you say your memory is better now, about the same, or worse now than it was then?

- **Self-Reported Diagnosis** (Section C)
  - Has a doctor ever told you that you have a memory-related disease?

- **Need for Cognition** in Psychosocial Leave-Behind

  (Section LB)

HRS

NEW COGNITION MEASURES IN HRS CORE SINCE 2010

- **Quantitative Reasoning (Numeracy)**
  - **Everyday Numbers**

    If the chance of getting a disease is 10 percent, how many people out of 1,000 would be expected to get the disease?
  - **Number Series Problems**

    Respondent hears a patterned series of numbers that includes one blank slot. The task is to determine the missing number (6 series given)

- **Verbal Fluency**
  - Respondent is asked to name as many examples as possible from a given category within a 1-minute time period

- **Verbal Analogies**
  - Module given to 10% HRS Sample in 2012
  - E.g., Mother is to Father as Daughter is to _____.

HRS

COGNITION IN HRS CORE: WAVE DIFFERENCES

MEASURE	92	93	94	95	96	98 & later	10 & later
Immediate Recall (20)	■		■				
Immediate Recall (10)		■		■	■	■	■
Delayed Recall (20)	■		■				
Delayed Recall (10)		■		■	■	■	■
Serial 7s		■		■	■	■	■
Count Backwards from 10 & 86		■		■	■	■	■
Everyday Numbers (02 onwards)						■	■
Number Series						■	
Verbal Fluency						■	
Rate Memory	■	■					
Mental Status (TICS 65+ Only)		■		■	■	■	■
Vocabulary (65+: After 04 Alternate Yrs)				■	■	■	■
Proxy Interview		■		■	■	■	■

HRS

PROXY QUESTIONS: SECTION D

- **For when R is unwilling or unable to answer for themselves**
    - Often spouse or other close relative
- **Ratings**
    - How would you rate R's memory at the present time?
    - How would you rate R's ability to make judgments and decisions?
    - How would you rate R's ability to organize (his/her) daily activities?
- **Jorm IQCODE: 16-item version** (example)
    - Compared with two years ago, how is (R's first name) at remembering things about family and friends, such as occupations, birthdays, and addresses? Has this improved, not much changed, or gotten worse?
- **Behavior problems** (example)
    - Now, thinking about some current behaviors, does (R's first name) ever get lost in a familiar environment?
- **Proxy report of dementia diagnosis**

HRS

DEALING WITH MISSING DATA: IMPUTATION

- Data not missing at random due to age skips, attrition, proxy respondents

- To minimize the effect of missing data HRS imputes missing data to yield a more complete data set

- Imputations available in separate file for 1992-2014

HRS

ADAMS

AGING, DEMOGRAPHICS, AND MEMORY STUDY (ADAMS)

- First national community-based study of dementia in the US
- N=1,770 HRS respondents age 70+ selected from HRS 2000 and 2002 waves
- Stratified by five levels of cognitive functioning: high, moderate, and low normal functioning versus borderline impaired, low functioning (proxy information)
- Normal functioning strata stratified by age group (70-79, 80+) and gender
- N=856 completed the interview in 2001- 2003
- Extensive in-home clinical evaluations and neuropsychological assessments to determine a diagnosis of normal function, cognitive impairment not dementia (CIND), or dementia
- Followed over 10 years for four waves (A-D)
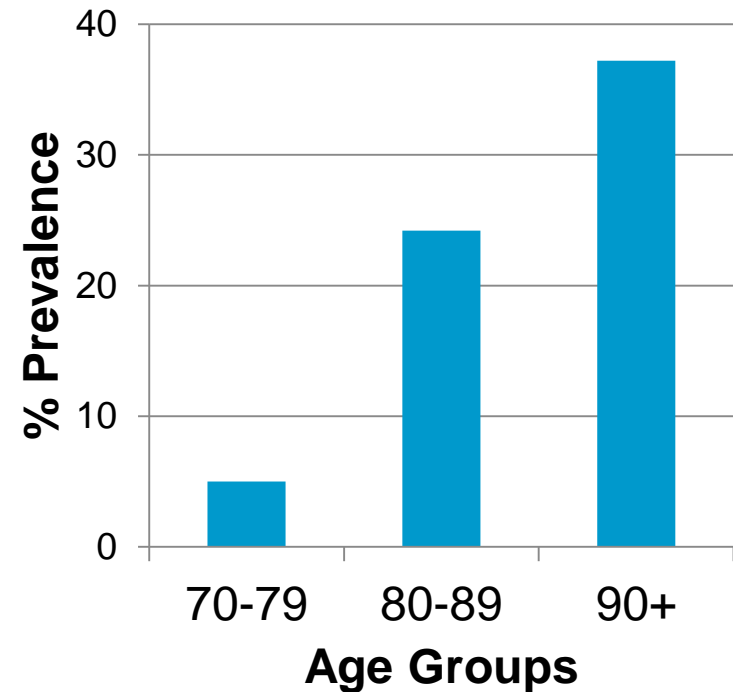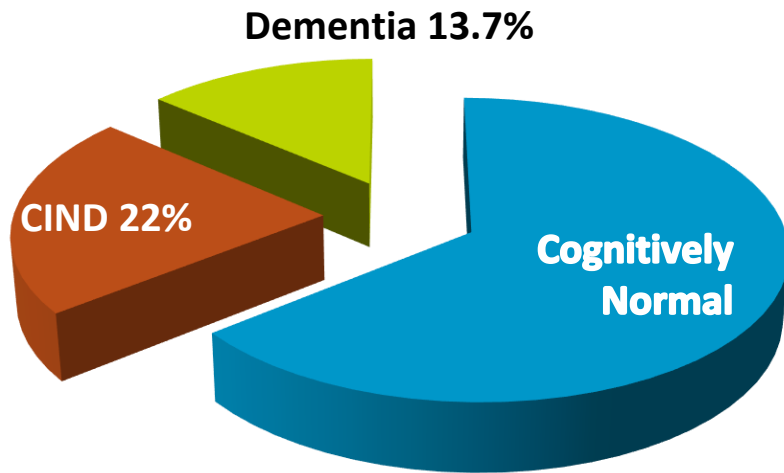
HRS

ADAMS: WHAT'S AVAILABLE?

For all four waves:
- Clinical and medical history
- Clinical Dementia Rating Scale
- Family History of Memory Problems
- Informant Questionnaire
- Blessed Dementia Scale
- Modified Hachinski Ischemic Score
- Dementia Severity Rating Scale
- Neuropsychiatric Inventory (e.g., trail making, CERAD tests, symbol digit test)
- Composite International Diagnostic Interview
- CIDI Depression Screen
- Memory Impairment Screen
- Buccal DNA sample for *APOE* genotyping, height/weight, BP, pulse
- Standardized Neurological Physical Examination
- Current prescription medications
- Caregiving Questionnaire

HRS

PREVALENCE OF DEMENTIA AND COGNITIVE IMPAIRMENT NOT DEMENTIA (CIND)

US estimates from ADAMS

Plassman et al. (2007). *Neuroepidemiology, 29,*125-132

HRS

HEALTHY COGNITIVE AGING PROJECT

HRS

WHY HCAP?

- ADAMS was an *intensive* 3-hour cognitive assessment using specially trained interviewers

- The aim of HCAP was to develop a less intensive (and less expensive) cognitive assessment that will still provide valid data on cognitive impairment and dementia in the US population

- Designed to provide comparable data in other countries with HRS sister studies
  - H also stands for harmonized

HRS

HCAP DESIGN

- A cognitive interview that can be administered by a lay interviewer to HRS respondents and a nominated informant

- Use the results of that cognitive testing (in conjunction with other HRS data) to determine whether the HRS respondent has cognitive impairment or dementia

HRS

HCAP DESIGN

Two interviews:

- 1-hour respondent interview
  - cognitive test battery (some overlap with HRS core and ADAMS)
- 20-minute informant interview
  - Individual nominated by respondent
  - Questions about the respondent's functioning and changes in abilities over the last 10 years
  - HCAP is only a self-interview—no proxies

HRS

HCAP SAMPLE

- Subset of HRS respondents

- 65+ years old

- 1/2 of uncoupled respondents

- 1 respondent from each coupled household

- Completed HRS 2016 interview

- Self or proxy

  - BUT

- HCAP can only be a self-interview

HRS

HCAP DATA

- Sample is around 3,400 respondents

- Respondent tests include a variety of copyrighted neuropsychometric tests as well as HRS core measures

- Expected to be released as Sensitive Health Data – like ADAMS

HRS

HCAP MEASURES

Respondent tests include:

- MMSE
- CERAD Word List Learning Recall and Recognition CERAD Constructional Praxis
- Animal Naming
- Symbol Digit Substitution Test
- Story Recall via Brave Man and Logical Memory
- Letter Cancellation
- Backwards Counting (from MIDUS)
- Number Series (from HRS)
- TICS (from HRS)
- Raven's Standard Progressive Matrices (a subset)
- CES-D
- (Optional) Smell Test (from NSHAP)

Informant questionnaires include:

- Jorm IQ-Code
- Blessed
- 10-66 activity questions
- New HRS-developed activity questions

HRS

DOCUMENTATION

DOCUMENTATION

Ofstedal MB et al. (**2005**). Documentation of Cognitive Functioning Measures in the Health and Retirement Study.

Heeringa SG et al. (**2009**). Aging, Demographics and Memory Study (ADAMS): Sample Design, Weighting and Analysis for ADAMS.

Fisher et al. (**2013**). New Measures of Fluid Intelligence in the HRS: Quantitative Reasoning, Verbal Reasoning, Verbal Fluency.

Weir et al. (**2014**). Cognitive Test Selection for the Harmonized Cognitive Assessment Protocol (HCAP).

Fisher et al. (**2017**). HRS Imputation of Cognitive Functioning Measures: 1992–2014.

- Data descriptions for each data product

HRS

Part I Clarifying Questions?

- We will not be using the raised hand feature today
- Please use the questions feature accessible on the right hand side of your screen
- If we do not get to all of the questions today, we will email responses after the webinar

THE GERONTOLOGICAL SOCIETY OF AMERICA

Part II: Tour of the HRS Website

- http://hrsonline.isr.umich.edu/

THE GERONTOLOGICAL
SOCIETY OF AMERICA

Health and Retirement Study Data on Cognition

- Archived recording on GSA's YouTube
- Copy of today's slides

Save The Date:

- HRS Biomarkers Data: Tuesday, April 24 at Noon ET

www.geron.org/webinar

THE **GERONTOLOGICAL** SOCIETY OF AMERICA

Webinar Evaluation

In an effort for continual improvement, we would like to hear your thoughts. Please provide feedback by clicking the survey link at the end of the webinar.

Thank you again—we hope you enjoyed the program!

THE
GERONTOLOGICAL
SOCIETY OF AMERICA

•@geronsociety

Part II Clarifying Questions?

- We will not be using the raised hand feature today
- Please use the questions feature accessible on the right hand side of your screen
- If we do not get to all of the questions today, we will email responses after the webinar

THE
GERONTOLOGICAL
SOCIETY OF AMERICA

Thank you

GSA

- The nation's oldest and largest interdisciplinary organization devoted to research, education, and practice in the field of aging
  - 5,500+ interdisciplinary members around the world touching all facets of aging
- Mission
  - Promote multi- and interdisciplinary research in aging
  - Translate and disseminate research findings
  - Promote/advocate for education/awareness on aging across disciplines
  - Foster application of research into policy development
- To view other GSA webinars, visit geron.org/webinar

THE GERONTOLOGICAL SOCIETY OF AMERICA