



# The Cognitive & Emotional Health Project: The Healthy Brain.



National Institute on Aging (NIA)  
National Institute of Mental Health (NIMH)  
National Institute of Neurological Disorders & Stroke  
(NINDS)

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# Cognitive & Emotional Health Project: The Healthy Brain

## *Ultimate objective*

Ascertain effective & practical measures that can be utilized by the public & health care providers to promote cognitive & emotional health in older adults

*By:*

- Assessing the state of longitudinal and epidemiological research on demographic, social, and biological determinants of cognitive and emotional health in aging adults and the pathways by which cognitive and emotional health may reciprocally influence each other
- Soliciting research to fill in the gaps in knowledge in these areas

National Institute on Aging  
Molly Wagster, Ph.D.  
Tammy Rowe

National Institute of Mental Health  
Bruce Cuthbert, Ph.D.  
Laurel Gilligan

National Institute of Neurological Disorders and  
Stroke  
Emmeline Edwards, Ph.D.  
Stacey Chambers

# Comprehensive Review of Measures

Cognitive health

Emotional health

Demographic/social factors

Biomedical/physiologic factors

Shari Bassuk, ScD  
Brigham & Women's Hospital

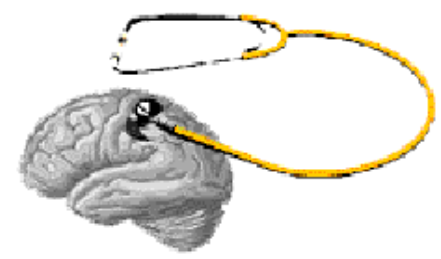
# Cognitive & Emotional Health: The Healthy Brain Workshop

July 2001

[NIA, NIMH, NINDS]

## Recommendations

- Review of existing data
  - Complete bibliography
  - Complete the catalogue of NIH supported studies and explore feasibility of adding information about non-NIH supported and international studies.
- Create a panel to conduct a critical analysis of existing studies, with a goal of identifying opportunities for secondary analysis, add-on studies and identifying weaknesses and gaps in existing data and proposing additional focused multi-site analysis.
- Encourage formation of a consortium of studies for collaborative analysis and reanalysis of existing data.
- Develop trans-institute RFA focused on cognitive and psychosocial health in adults



## *Cognitive and Emotional Health Project: The Healthy Brain*

### CONTENTS

[Organizing Committee](#)

Contacts for each participating Institute

[FAQs](#)

Information on how this project is organized

[Related Links](#)

Three Institutes, the **National Institute on Aging (NIA)**, the **National Institute of Mental Health (NIMH)** and the **National Institute of Neurological Disorders and Stroke (NINDS)**, have joined efforts to launch a new trans-NIH initiative, *Cognitive and Emotional Health Project: The Healthy Brain*. There are now about 45 million Americans over age 60 and 117 million over age 40. Current evidence indicates that a large number of them are at substantial risk for cognitive impairment from many causes as they age. The same is true for emotional disorders. While research into biological mechanisms and environmental and social effects are yielding promising results in both animal and human studies, much remains to be discovered. Advances in understanding the positive and negative changes in cognition and emotion in adulthood, and what can be done to preserve and enhance positive outcomes, is at the core of the missions of the participating Institutes. The overall goal of the "Healthy Brain Project" is to assess the state of longitudinal and epidemiological research on demographic, social and biologic determinants of cognitive and emotional health in aging adults and the pathways by which

[National Institute of Mental Health](#)  
[National Institute of Neurological Disorders and Stroke](#)

**Related Activities**

## Cognitive and Emotional Health Project

o A set of four **review documents** was drafted to provide an outline summary of measures and results in four important domains relevant to healthy aging. An **Executive Summary** is also available to provide an overview of all four documents.

- **Cognitive Health**
- **Emotional Health**
- **Demographic and Social Factors**
- **Biomedical and Physiologic Factors**

o A **questionnaire** was created to poll investigators conducting large-scale longitudinal and epidemiological studies of cognitive and emotional health, in order to determine what variables were/are being measured, e.g., demographic, biological, cognitive, emotional, psychosocial, etc. Investigators conducting such studies are invited to complete the web-based version of this questionnaire if they have not previously completed the instrument. The results are being compiled into a data base, which will allow the participating institutes to consider evaluative literature reviews, and also future studies involving secondary analysis of single or combined data sets.

o **Critical Evaluation Study Committee**

o **Cognitive and Emotional Health: The Healthy Brain Workshop**





# Critical Evaluation Study Committee

*[NIA, NIMH, NINDS]*

Hugh C. Hendrie  
Committee Chair  
*Indiana University*

Marilyn Albert  
*John Hopkins*

Sujuan Gao  
*Indiana University*

David Knopman  
*Mayo Clinic*

Kristine Yaffe  
*University of California  
at San Francisco*

*Meryl Butters*  
*University of Pittsburgh*

Lenore Launer  
*NIA Intramural*

Bruce Cuthbert  
*NIMH*

Emmeline Edwards  
*NINDS*

Molly Wagster  
*NIA*

# Critical Evaluation Study Committee

## Overall Strategy

- Discuss strategy for conducting analysis
- Identify criteria for cognitive and emotional health
- Operationalise criteria
- Select outcomes relevant to cognitive and emotional health
- Review data collected from NIH supported large cohort studies
- Apply operationalised criteria to the large cohort studies
- Select studies that meet criteria
- Add other North American and European studies that meet criteria
- Collect bibliography from all identified studies
- Construct data base
- Conduct critical analysis

# Positive Health

Complete well being not just absence of infirmity

Proposed criteria

- Leading a life of purpose
- Having quality connections to others
- Possessing self regard
- Experiencing mastery over one surroundings

*The Healthy Brain Workshop (2001)*

# Health

A state of well being and  
capacity to function successfully  
in changing circumstances

Thomas S. Inui, ScM, MD

President and CEO of Regenstrief Institute, Inc. and Regenstrief Senior Chair;

Professor of Medicine and Associate Dean for Health Care Research, Indiana University School of Medicine

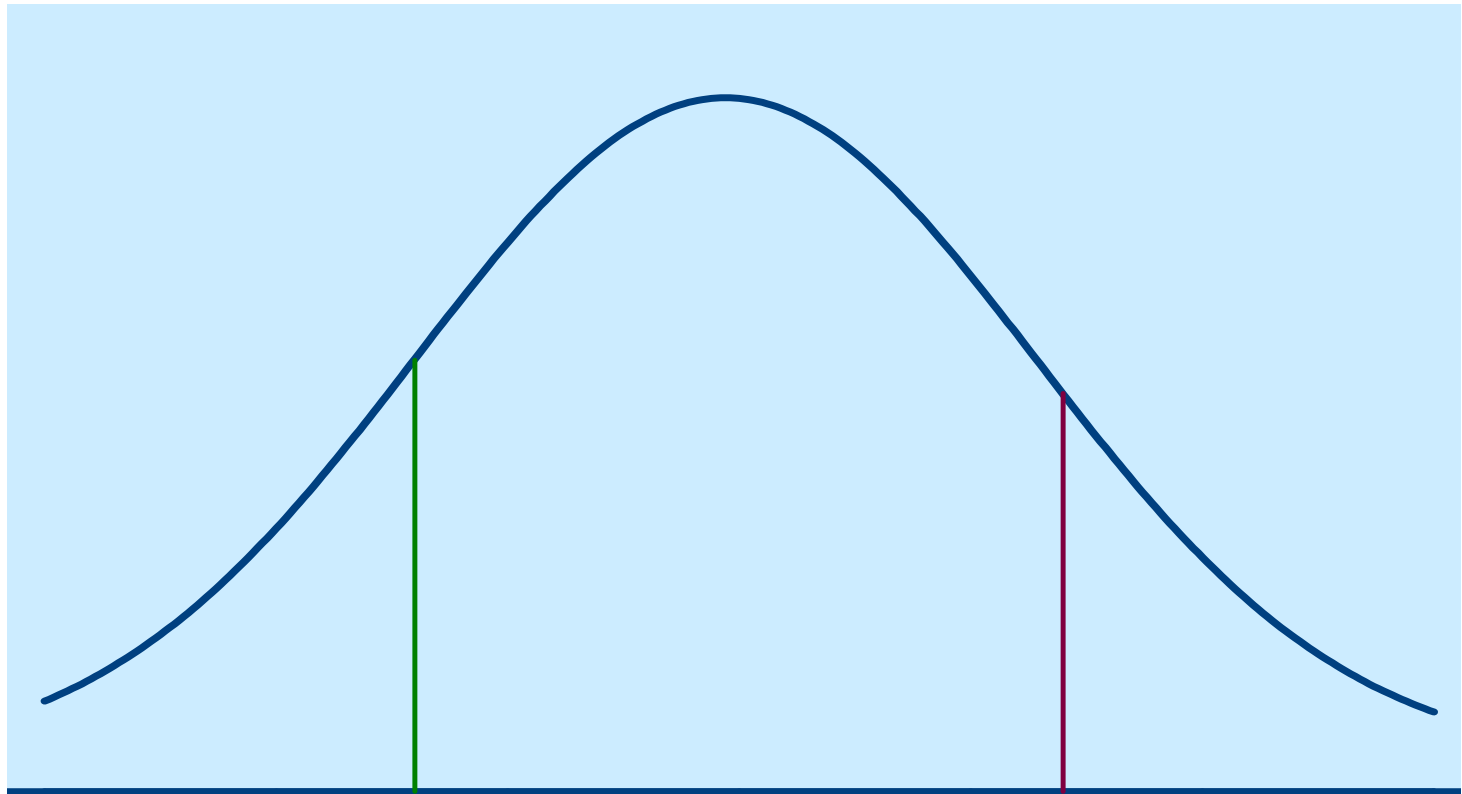
# Cognitive Outcomes

- Prevent Disease e.g. A.D. and Stroke
- Prevent Cognitive Decline
  - Single domain or composite measure
- Enhance Cognitive Performance
- Encourage “Wisdom”

# Emotional Outcomes

- Prevent Disease e.g.M.D.D., Anxiety Disorders
- Reduce Negative Affect
- Enhance Positive affect
- Promote Resilience
- Encourage “Wisdom”

# Health as an Outcome

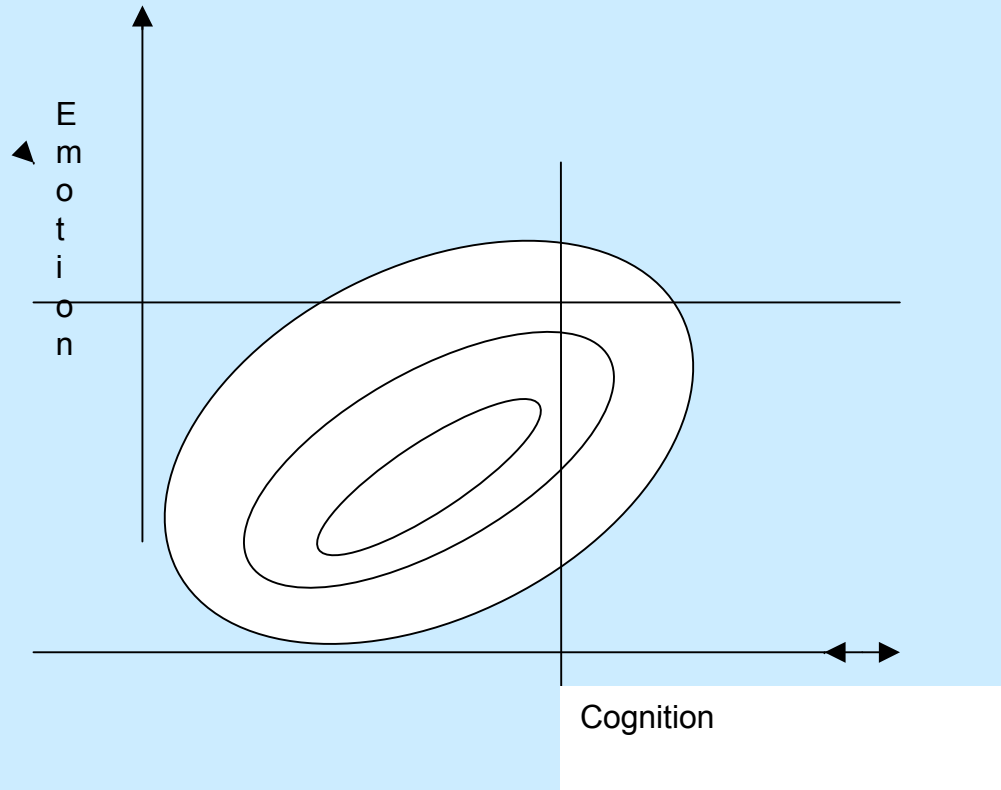


Diseased

Healthy

**Composite scores**  
**(allows one dimension to dominate the other)**  
**(avoid ceiling effect)**

# Health as an Outcome



**A multi-dimensional model of cognitive and emotional scores  
(equal weight given to each dimension)**



# Agreement between cross sectional and longitudinal definitions of cognitive health

Cross-sectional	Longitudinal	
	Top 1/3	Bottom 2/3
Top 1/3	361	276
Bottom 2/3	167	894

Kappa=0.42

Defined as top 1/3 of baseline cognitive scores and top 1/3 of cognitive decline

# Longitudinal Stability of measurements of cognitive change

	2 yr decline	5 yr decline
8 yr decline	- 0.006	0.94

Top 1/3 of cognitive change at each measurement wave. Kappa agreements

# Agreement between definitions of cognitive and emotional health

Cognitive health	Emotional Health	
	Top 1/3	Bottom 2/3
Top 1/3	32 (13.3%)	88 (36.7%)
Bottom 2/3	36 (15%)	84 (35%)

Total n=240

Kappa=-0.03

Defines as to 1/3 of cognitive and emotional decline over 8 yrs

# Measurements for Cognitive and Emotional Health as an Outcome

## Cognition

No Ceiling effect { Memory  
Conceptualization/Reasoning/Executive Function

## Emotion

Depression

Anxiety

Emotional well being /Quality of Life

Resilience/ Self mastery/Vitality/

# Measurement criteria applied to studies

- Cohort size - >500
- A Broad Range of Demographic Biological and Psychosocial Factors
- Longitudinal design - at least one follow-up
- Cognitive measurements – Memory +1 other domain
- Dementia Evaluation – Clinical
- Assessment of depression – at least one of: screening questionnaire , structured interview, clinical examination
- Psychosocial status – at least one of: quality of life, sense of control, hopelessness, optimism

# **Application of Criteria for Health Measurement to Study Catalog**

# Healthy Brain Project

## Studies that met criteria for inclusion in the Critical Evaluation Analysis

Principal Investigator	Title of Study	Sample size at the end of enrollment (Qnum 1.4)	Number of follow-up waves as of today (Qnum 1.7)	Neuropsychological Tests Memory (Qnum 2.3.1.a)	Neuropsychological Tests Language (Qnum 2.3.2.a)	Neuropsychological Tests Conceptualization, reasoning (Qnum 2.3.3.a)	Neuropsychological Tests Visuospatial ability (Qnum 2.3.4.a)	Neuropsychological Tests Other abilities (Qnum 2.3.5.a)	Dementia evaluation, clinical (Qnum 2.4.a)	Depression or depressive symptoms- Screening instrument (e.g., CES-D, BDI) (Qnum 4.1.a)	Depression or depressive symptoms- Structured diagnostic interview (e.g. DIS, SCID) (Qnum 4.1.b)	Depression or depressive symptoms- Clinical Examination (Qnum 4.1.c)	PSYCHOSOCIAL STATUS- Perceived health/quality of life (Qnum 5.1)	PSYCHOSOCIAL STATUS- Sense of control, self-efficacy, or mastery (Qnum 5.7)	PSYCHOSOCIAL STATUS- Hopelessness (Qnum 5.10)	PSYCHOSOCIAL STATUS- Optimism (Qnum 5.11)
John Breiter	Epidemiology of Dementia in Cache Co., Utah	5092	1	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	N
Steve Cummings	Study of Osteoporotic Fractures															
Denis Evans	Chicago Health and Aging Project	6158	3	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y
Linda Fried (fill out by Michele Carlson)	Women's Health and Aging Study (WHAS)	436	4	Y	Y	N	Y	Y	N	N	N	N	Y	Y	Y	N
Francine Grodstein #1a	Trials of Prevention of Cognitive Decline in Women and Men (ancillary of Women's Health Study)	6000	2	Y	Y	Y	N	Y	N	Y	N	N	Y	Y	Y	Y
Francine Grodstein #2a	Preventing Cognitive Decline- A prospective Study (ancillary of Nurse's Health Study)	19,000	3	Y	Y	Y	N	Y	N	Y	N	N	Y	Y	Y	Y
Francine Grodstein #3a	Trials of Prevention of Cognitive Decline in Women & Men (Physician's Health Study)	6,000	2	Y	Y	Y	N	Y	N	Y	N	N	Y	Y	Y	Y
Francine Grodstein #4a	Trials of Prevention of Cognitive Decline in Women and Men (ancillary of Women's Antioxidant Cardiovascular Study)	3000	3	Y	Y	Y	N	Y	N	Y	N	N	Y	Y	Y	Y
Robert Hauser	Wisconsin Longitudinal Study	10317	4	Y	N	Y	N	Y	N	Y	Y	N	Y	Y	N	N
Tamara Harris (K. Yaffe co-investigator)	Health Aging and Body Composition Study	3075	4	Y	N	Y	N	Y	N	Y	N	N	Y	Y	Y	Y

# Healthy Brain Project

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Lew Kuller	Cognitive tests, APOE, brain MRI and risks of dementia	3500	8	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
Eric Larson 3	KAME	1991	8	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
Eric Larson 2	University of Washington Adult Changes in Thought (ACT) Study	2581	5494?	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	N
Joan Lindsay	Canadian Study of Health and Aging															
Richard Maveux	The Epidemiology of Dementia in an Urban Community	2500	4	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N	N
Denis Evans (Judith McCann)	Longitudinal Study of Daycare in Alzheimer's Disease	517	9 (average)	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
Nancy Pedersen	Swedish Adoption/ Twin Study of Aging	2020	4	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	Y
Nancy Pedersen	Genetic and Environmental Influences- Biobehavioral Aging	2000	4	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	Y
Ralph Sacco	Northern Manhattan Study	3298	approx 5	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	N	N



# Healthy Brain Project

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Principal Investigator	Title of Study	Sample size at the end of enrollment (Onum 1.4)	Number of follow-up waves as of today (Onum 1.7)	Neuropsychological Tests Memory (Qnum 2.3.1.a)	Neuropsychological Tests Language (Qnum 2.3.2.a)	Neuropsychological Tests Conceptualization, reasoning (Qnum 2.3.3.a)	Neuro-psychological Tests Visuospatial ability (Qnum 2.3.4.a)	Neuro-psychological Tests Other abilities (Qnum 2.3.5.a)	Dementia evaluation, clinical (Qnum 2.4.a)	Depression or depressive symptoms- Screening instrument (e.g., CES-D, BDI) (Onum 4.1.a)	Depression or depressive symptoms- Structured diagnostic interview (e.g. DIS, SCID) (Onum 4.1.b)	Depression or depressive symptoms- Clinical Examination (Qnum 4.1.c)	PSYCHOSOCIAL STATUS- Perceived health/quality of life (Onum 5.1)	PSYCHOSOCIAL STATUS- Sense of control, self-efficacy, or mastery (Onum 5.7)	PSYCHOSOCIAL STATUS- Hopelessness (Onum 5.10)	PSYCHOSOCIAL STATUS- Optimism (Onum 5.11)
Teresa Seeman	MacArthur Study of Successful Aging	1189	3	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N
Brian Schwartz & Thomas Glass	Explaining disparities in cognitive function in seniors: The Baltimore Memory Study	1,140	1 (2 total visits to date)	Y	Y	Y	Y	Y	not given	Y	N	N	Y	Y	N	N
Lon White (fill out by Lenore Launer)	Honolulu Asia Aging Study (HAAS)	3,734	7	Y	Y	N	Y	Y	Y	Y	N	N	Y	N	N	N
Robert Willis	Health and Retirement Study (HRS)	9824	4	Y	Y	Y	N	N	N	Y	N	N	Y	N	N	N
Robert Willis	Asset and Health Dynamics Among the Oldest Old (AHEAD)	7447	3	Y	Y	N	N	N	Y	Y	N	N	Y	N	N	N
Philip Wolf	Epidemiology of Dementia	10000	26	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N
Philip Wolf	MRI, Genetic & Cognitive Precursors of AD & Dementia	10000	26	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	N	N
Philip Wolf	Precursors of Stroke Incidence and Prognosis, Framingham Heart Study	10850	20	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	N	N
Elizabeth Zelinski	A Longitudinal Study of Cognition in Adults	600	5	Y	Y	Y	Y	Y	N	Y	N	N	Y	Y	N	N

# Other European and North American Studies

- Medical Research Council Cognitive Function and Aging Study
- Berlin Aging study
- Rotterdam Study
- PAQUID
- Swiss Interdisciplinary Longitudinal Study
- Longitudinal Aging Study Amsterdam
- Kungsholmen Project
- Amsterdam Study of the Elderly
- Canadian Study on Health and Aging



# CHEP Bibliography

#	Principal Investigator	Title of Study	Year	Search Results (# of Publications)	REVIEWER
(1990-2004)					
1	Baltes, P.B.	Berlin Aging Study	{1990}	64	Knopman
2	Brayne, Carol & Huppert, Felicia	Medical Research Council Cognitive Function and Aging Study (MRC CFA Study)	{1991}	17	Hendrie
3	Breitner, John	Epidemiology of Dementia in Cache Co., Utah	1995	55	Yaffe
4	Breteler, M.M (94) & Hofman, A. (20)	Rotterdam Study	1990	75	Gao
5	Cummings, Steve	Study of Osteoporotic Fractures	{1986}	139	Yaffe
6	Dartigues, Jean Francis	PAQUID	1988	68	Gao
7	Evans, Denis	Chicago Health and Aging Project	1993	34	Yaffe
8	Guilley, Edith; Armi, Franca; Ghisletta, P.; Bickel, Jean-François	Swiss Interdisciplinary Longitudinal Study on the Oldest Old (SWILSO-O)	1994	36	Launer
9	Grodstein, Francine - 1	Trials of Prevention of Cognitive Decline in Women and Men (Ancillary of Women's Health Study)	2000	20	Albert
10	Grodstein, Francine - 3	Trials of Prevention of Cognitive Decline in Women and Men (Physicians' Health Study)	2001	27	Albert
11	Grodstein, Francine - 4	Trials of Prevention of Cognitive Decline in Women and Men (Ancillary of Women's Antioxidant Cardiovascular Study)	2000	18	Albert
12	Grodstein, Francine - 2	Preventing Cognitive Decline- A prospective Study (Ancillary of Nurses' Health Study)	1995	33	Albert

# CHEP Bibliography

13	Harris, Tamara (K. Yaffee co-PI)	Health Aging and Body Composition Study (Health ABC)	1997	78	Hendrie
14	Hauser, Robert	Wisconsin Longitudinal Study	1957	17	Knopman
15	Jonker, C.	Longitudinal Aging Study Amsterdam (LASA)	1992/1993	79	Knopman
16	Kuller, Lew	Cognitive tests, APOE, brain MRI and risks of dementia	1992	42	Knopman
17	Larson, Eric - 3	KAME	1990-1992	36	Yaffe
18	Larson, Eric -1	University of Washington Alzheimer's Disease Patient Registry (ADPR)	1987	27	Yaffe
19	Lindsay, Joan & McDowell, Ian	Canadian Study of Health and Aging	{1991}	121	Albert
20	Mayeux, Richard	The Epidemiology of Dementia in an Urban Community	1989	46	Butters
21	McCann, Judith	Longitudinal Study of Daycare in Alzheimer's Disease	1997	18	Knopman
22	Pedersen, Nancy - 1	Swedish Adoption/Twin Study of Aging	1984	44	Hendrie
23	Pedersen, Nancy - 2	Genetic and Environmental Influences- Biobehavioral Aging	1984	37	Butters
24	Sacco, Ralph	Northern Manhattan Study	1993	53	Butters
25	Schwartz, Brain & Glass, Thomas	Baltimore Memory Study	2000	45	Butters
26	Seeman, Teresa	MacArthur Study of Successful Aging	1988	41	Launer
27	White, Lon	Honolulu Asia Aging Study (HAAS) - Honolulu Heart Program	1965 early life - 1991 late life	53	Hendrie
28	Willis, Robert - 1	Health and Retirement Study (HRS)	1992	47	Launer

# CHEP Bibliography

29	Willis, Robert -2	Asset and Health Dynamics Among the Oldest Old (AHEAD)	1993	51	Launer
30	Winblad, B. & Fratiglioni, L.	Kungsholmen Project	{1987}	54	Hendrie
31	Wolf, Philip - 1	Epidemiology of Dementia	1948	38	Gao
32	Wolf, Philip - 2	MRI, Genetic & Cognitive Precursors of AD & Dementia	1948	19	Gao
33	Wolf, Philip - 3	Precursors of Stroke Incidence and Prognosis, Framingham Heart Study	1981	66	Gao
34	Zelinski, Elizabeth	Longitudinal Study of Cognition in Adults	1978	58	Launer
35	Geerlings MI, Schmand B, Braam AW	Amsterdam Study of the Elderly (AMSTEL)	{1990}	48	Butters

Total 1704

# Review Abstracts and Select Studies

- Cohort > 500
- Longitudinal in design
- Cognitive Outcomes
  - Cognitive decline
  - Cognitive Change
  - Etc.
- Emotional Outcomes
  - Depressive symptoms
  - Anxiety symptoms
  - Positive Affect
  - Optimism
  - Resilience
  - Wisdom
  - Etc.

# Healthy Brain Data Capturing

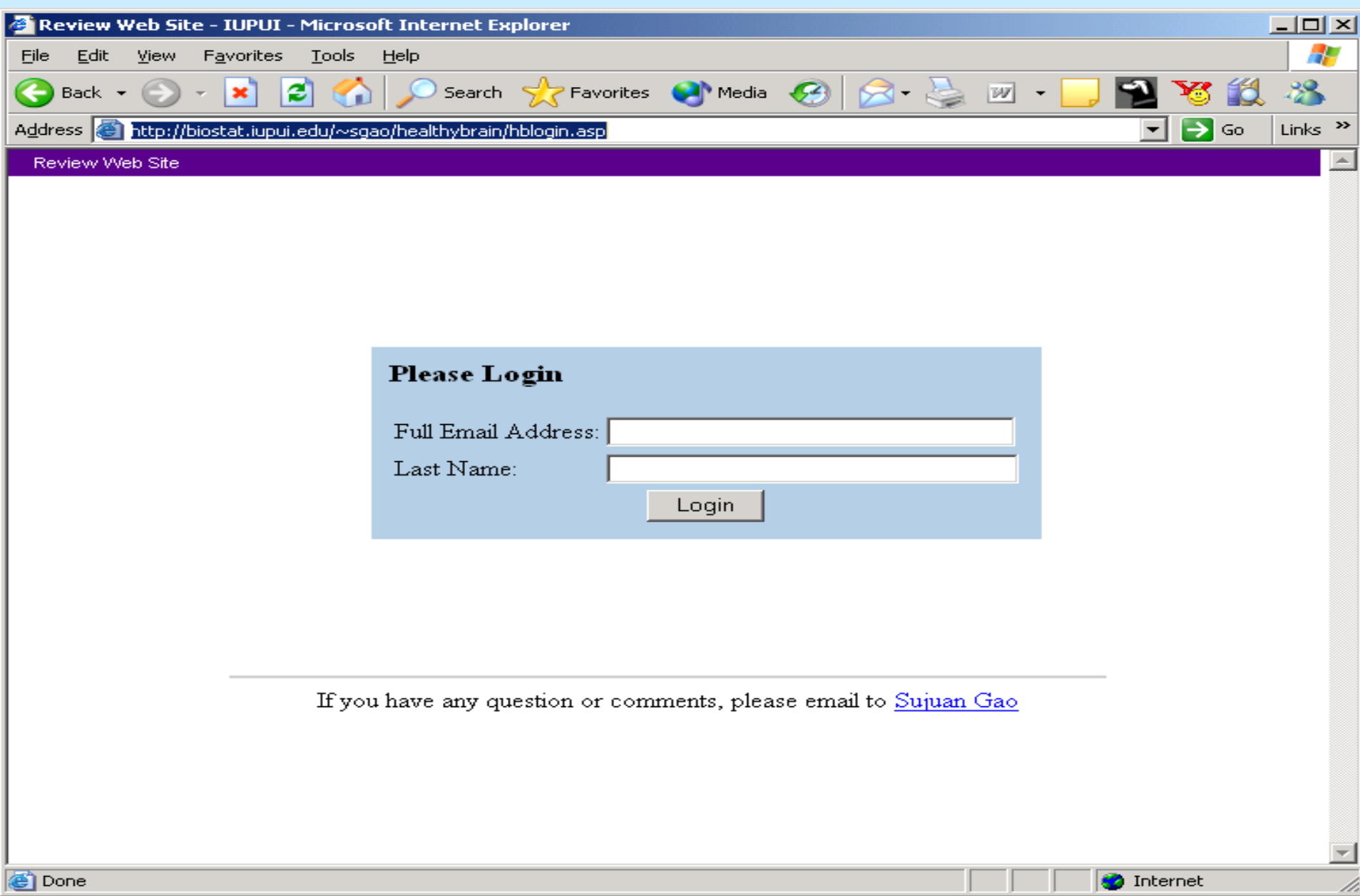
The web based system

# Address to the web site

<http://biostat.iupui.edu/~sgao/healthybrain/hblogin.asp>



# Login Page



# General Info Screen

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

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Address http://biostat.iupui.edu/~sgao/healthybrain/hbmain.asp

## Literature Review (Cognitive) Form for the Healthy Brain Project

[Find Existing Review](#) [New Review](#) [Instruction](#)

### A. General Information

1. Reviewer name	<input type="text" value="Sujuan Gao"/>
2. Name of the study	<input type="text" value="This is a demo"/>
3. Funding source	<input type="text" value="NIH"/>
4. Name of the first author:	Last name: <input type="text" value="Gao"/> Initial <input type="text" value="S"/>
5. Year published	<input type="text" value="1987"/>
6. Study design:	Observational <input type="radio"/> Randomized trial <input checked="" type="radio"/>
7. Cohort size	<input type="text" value="56"/>
8. Age range of the cohort:	minimum <input type="text" value="23"/> maximum <input type="text" value="78"/>
9. Mean age	<input type="text" value="45"/>
10. The cohort includes:	male <input checked="" type="radio"/> female <input type="radio"/> Both <input type="radio"/>
11. Race of the cohort:	White: <input checked="" type="checkbox"/> African American: <input checked="" type="checkbox"/> Hispanics: <input type="checkbox"/> Asian: <input type="checkbox"/> Native American: <input type="checkbox"/>
12. Length of follow-up:	<input type="text" value="3"/> years
13. Number of follow-up assessment:	<input type="text" value="5"/>

### B. Outcome and risk/protective factors

14. Definition of outcomes:	<input type="text" value="Cognitive decline"/>
Other	<input type="text"/>

Done Internet

# Definition of Outcomes

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Address <http://biostat.iupui.edu/%7Esgao/healthybrain/hbmain.asp> Go Links

[Find Existing Review](#) [New Review](#) [Instruction](#)

## A. General Information

1. Reviewer name	<input type="text" value="Sujuan Gao"/>
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3. Funding source	<input type="text"/>
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5. Year published	<input type="text"/>
6. Study design:	Observational <input type="radio"/> Randomized trial <input type="radio"/>
7. Cohort size	<input type="text"/>
8. Age range of the cohort:	minimum <input type="text"/> maximum <input type="text"/>
9. Mean age	<input type="text"/>
10. The cohort includes:	male <input type="radio"/> female <input type="radio"/> Both <input type="radio"/>
11. Race of the cohort:	White: <input type="checkbox"/> African American: <input type="checkbox"/> Hispanics: <input type="checkbox"/> Asian: <input type="checkbox"/> Native American: <input type="checkbox"/>
12. Length of follow-up:	<input type="text"/> years
13. Number of follow-up assessment:	<input type="text"/>

## B. Outcome and risk/protective factors

14. Definition of outcomes:	<input type="text" value="Select one"/>
Other	<input type="text" value="Select one"/>

Cognitive decline  
Cognitive change  
Cognitive function

Continue...

Done Internet

# Select Outcome Measures

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

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Address http://biostat.iupui.edu/~sgao/healthybrain/hbMain2.asp Go Links

## Literature Review (Cognitive) Form for the Healthy Brain Project

[New Review](#) [Instruction](#)

### A. General Information

1. Reviewer initials	Sujuan Gao
2. Name of the study	This is a demo
3. Funding source	NIH
4. Name of the first author:	Gao Initial S
5. Year published	1987
6. Study design:	Observational
7. Cohort size	56
8. Age range of the cohort:	minimum 23 maximum 78
9. Mean age	45
10. The cohort includes:	Male
11. Race of the cohort:	1, 2
12. Length of follow-up:	3 years
13. Number of follow-up assessment:	5

### B. Outcome and risk/protective factors

14. Definition of outcomes:	Cognitive decline
	Other

15. Outcome measures:	Select one
	Select one
	MMSE
	3MS
	other brief screening instrument
	Memory - verbal
	Memory - nonverbal
	Language
	Executive function

15a. Is this outcome dichotomous or continuous:	
-------------------------------------------------	--

Done Internet

# Select Type of Outcome Measures

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

File Edit View Favorites Tools Help

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Address <http://biostat.iupui.edu/~sgao/healthybrain/hbMain2.asp> Go Links >>

## Literature Review (Cognitive) Form for the Healthy Brain Project

[New Review](#) [Instruction](#)

### A. General Information

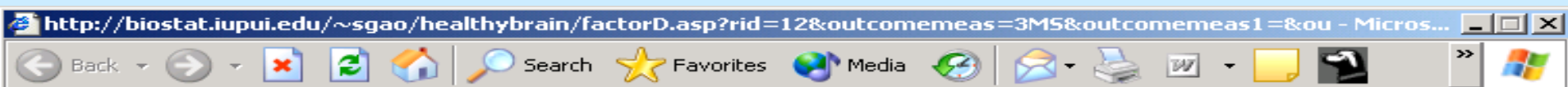
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9. Mean age	45
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11. Race of the cohort:	1, 2
12. Length of follow-up:	3 years
13. Number of follow-up assessment:	5

### B. Outcome and risk/protective factors

14. Definition of outcomes:	Cognitive decline
	Other
15. Outcome measures:	3MS
15a. Is this outcome dichotomous or continuous:	Select one
	Select one dichotomous continuous

Done Internet

# Risk/protective factors (Dichotomous)



**Risk/protective factors: record all factors used in the analysis including non-significant ones. If no p-value were recorded, enter "NS". If a factor (e.g. age) was listed as being adjusted for and no other information was given, record as "a".**

## Dichotomous outcome

Factor	Factor (Fill in)	Odds Ratio	Relative Risk	P-value
Age		<input type="text"/>	<input type="text"/>	<input type="text"/>
Sex (female vs male)		<input type="text"/>	<input type="text"/>	<input type="text"/>
Race		<input type="text"/>	<input type="text"/>	<input type="text"/>
Education		<input type="text"/>	<input type="text"/>	<input type="text"/>
S. E. S ---- income		<input type="text"/>	<input type="text"/>	<input type="text"/>
S. E. S ---- other	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Physical activities ---Strenuous		<input type="text"/>	<input type="text"/>	<input type="text"/>
Physical activities ---Moderate		<input type="text"/>	<input type="text"/>	<input type="text"/>
Physical activities ---Light		<input type="text"/>	<input type="text"/>	<input type="text"/>
Physical activities ---Other	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mental activities ---Write in	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mental activities ---Write in	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Psychosocial factors ---life satisfaction/quality of life		<input type="text"/>	<input type="text"/>	<input type="text"/>
Psychosocial factors ---emotional support		<input type="text"/>	<input type="text"/>	<input type="text"/>

# Risk/protective factors (Dichotomous)

http://biostat.iupui.edu/~sgao/healthybrain/factorD.asp?rid=13&outcomemeas=cognitive&outcomemea ...

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Psychosocial factors ---social networks				
Psychosocial factors ---self efficacy /resilience				
Psychosocial factors --- Other	<input type="text"/>			
Psychosocial factors --- Other	<input type="text"/>			
Psychosocial factors --- Other	<input type="text"/>			
Psychosocial factors --- Other	<input type="text"/>			
Stress				
Depression				
Anxiety				
Alcohol				
Smoking				
Diabetes				
Hypertension				
Other chronic disease --- Write in	<input type="text"/>			
Other chronic disease --- Write in	<input type="text"/>			
Genetic factors --- APOE				
Genetic factors --- Other (write in)	<input type="text"/>			
Blood pressure				
BMI				
Lipids --- Cholesterol				

# Risk/protective factors (Dichotomous)

http://biostat.iupui.edu/~sgao/healthybrain/factorD.asp?rid=13&outcomemeas=cognitive&outcomemea ...

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Lipids --- HDL				
Lipids --- LDL				
Lipids --- Triglyceride				
Homocysteine				
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Other biological factors --- Write in	<input type="text"/>			
Brain imaging				
Diet --- low fat diet				
Diet --- high protein diet				
Head injury				
Cholinesterase inhibitors				
Memantine				
NSAIDS				
Statins				





# Risk/Protective factors (Continuous)

http://biostat.iupui.edu/~sgao/healthybrain/factorC.asp?rid=12&outcomemeas=3MS&outcomemeas1=&ou - Micros...  
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Please specify statistical methods used:

- Mixed effect model/random effect model  
 Regression model/ANCOVA  
 Structural equation model/LISREL  
 Other method

**Risk/protective factors: record all factors used in the analysis including non-significant ones. If no p-value were recorded, enter "NS". If a factor (e.g. age) was listed as being adjusted for and no other information was given, record as "a".**

## Continuous outcome

Factor	Factor (Fill in)	Parameter estimate	P-value
Age		<input type="text"/>	<input type="text"/>
Sex (female vs male)		<input type="text"/>	<input type="text"/>
Race		<input type="text"/>	<input type="text"/>
Education		<input type="text"/>	<input type="text"/>
S. E. S ---- income		<input type="text"/>	<input type="text"/>
S. E. S ---- other	<input type="text"/>	<input type="text"/>	<input type="text"/>
Physical activities ---Strenuous		<input type="text"/>	<input type="text"/>
Physical activities ---Moderate		<input type="text"/>	<input type="text"/>
Physical activities ---Light		<input type="text"/>	<input type="text"/>
Physical activities ---Other	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mental activities ---Write in	<input type="text"/>	<input type="text"/>	<input type="text"/>
Mental activities ---Write in	<input type="text"/>	<input type="text"/>	<input type="text"/>

# Reviewer's Notes

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

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Address <http://biostat.iupui.edu/~sgao/healthybrain/hbMain2.asp> Go Links

[New Review](#) [Instruction](#)

**A. General Information**

1. Re  
2. Na  
3. Fu  
4. Na  
5. Ye  
6. St  
7. Co  
8. Ag  
9. M  
10. T  
11. R  
12. L  
13. N

<http://biostat.iupui.edu/~sgao/healthybrain/notes.asp?rid=1&username=sgao@i...>

<http://biostat.iupui.edu/~sgao/healthybrain/notes.asp?rid=18>

This is my comments for this study...

Submit

**B. O**

14. D

15. C

15a.

Click here to complete the entire review and enter additional comments

Done Internet

# View/Edit Existing Review

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

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Address <http://biostat.iupui.edu/%7Esgao/healthybrain/reviewrpt.asp?rid=6&username=sgao@iupui.edu&password=gao> Go Links

## Literature Review (Cognitive) Report for the Healthy Brain Project

[Edit Review](#) [New Review](#)

### A. General Information

1. Reviewer initials	Sujuan Gao
2. Name of the study	MacArthur Studies
3. Funding source	MacArthur Foundation
4. Name of the first author:	Albert Initial M
5. Year published	1995
6. Study design:	Observational
7. Cohort size	1192
8. Age range of the cohort:	minimum 70 maximum 79
9. Mean age	74
10. The cohort includes:	Both male and female
11. Race of the cohort:	1, 2
12. Length of follow-up:	2 years
13. Number of follow-up assessment:	1

### B. Outcome and risk/protective factors

14. Definition of outcomes:	Cognitive change
	Other

Factors	Dichotomous outcome			Continuous Outcome	
	Odds Ratio	Relative Risk	p-value	Parameter Estimate	p-value

# View/Edit Existing Review

Literature Review (Cognitive) Form for the Healthy Brain Project - Microsoft Internet Explorer

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Address <http://biostat.iupui.edu/%7Esgao/healthybrain/reviewrpt.asp?rid=6&username=sgao@iupui.edu&password=gao> Go Links >>

Factors	Dichotomous outcome			Continuous Outcome	
	Odds Ratio	Relative Risk	p-value	Parameter Estimate	p-value
Outcome measures is <b>Memory-verbal;Memory-noneverbal;Language; Conceptualization; Spatial orientation;</b> and the statistical methods used: <b>3</b>					
Age					0.10
Sex (female vs male)					a
Race					0.01
Education				0.256	0.01
Physical activities ---Strenuous				0.107	0.05
Psychosocial factors ---life satisfaction/quality of life					ns
Psychosocial factors ---emotional support					ns
Psychosocial factors ---social networks					ns
Psychosocial factors ---self efficacy /resilience				0.023	0.01
Depression					ns
Anxiety					ns
Alcohol					ns
Smoking					ns
Lipids --- Cholesterol					ns
Lipids --- HDL					ns
Other biological factors --- Write in -----Pulmonary peak expirial flow				0.12	0.05
Other biological factors --- Write in					

Done

Internet

# Analyses

Analyses to determine the strength [and consistency] of the relationship between risk factors and outcomes relating to cognitive and emotional health

# Special Acknowledgments

- Tammy Rowe NIA
- Stacey Chambers NINDS
- Laurel Gilligan NIMH

**“ Mens Sana in Corpore  
Sano”  
Juvenal**





# Increasing Interest in Maintenance of Function

- I. Increasing interest in intervention prior to disease
- II. Increasing interest in maximizing function
- III. Interest in taking more control over health care and health outcomes
- IV. Requires longitudinal perspective
- V. Requires study of multiple interacting factors

# Report from the National Research Council

*(Commissioned by the NIA)*

The Aging Mind (2000)

Opportunities in Cognitive Research

# Report of National Advisory Council on Mental Health Working Group on Aging

- I. A life span approach is critical to understanding mental health
- II. It is important to understand successful or healthy aging as well as the causes, course, and consequences of mental illness in late life
- III. Effective preventive interventions in late-life mental illness are greatly needed
- IV. Further research on unique aspects of mental disorders in aging population...is needed
- V. The aging brain presents unique opportunities for scientific research on mental illness and mental health
- VI. NIMH portfolio – must address better prevention and treatment interventions in late-life mental disorders
- VII. Current knowledge must be disseminated widely

# Alzheimer Association 2004

“Maintain Your Brain”  
(new initiative aimed at 50+)

# Alzheimer Association

## Potential Interventions / Risk Factors

### Opinions of an Expert Panel

<i>INTERVENTIONS RISK FACTORS</i>	<i>SYMPTOM RELIEF</i>	<i>DISEASE PROGRESSION</i>	<i>PREVENTION</i>	<i>SECONDARY BENEFIT<sup>(1)</sup></i>
<i>ChEIs</i>				
<i>Memantine</i>				
<i>Ibuprophen/NSAID</i>				
<i>Statins</i>				
<i>Head injury</i>				
<i>Blood pressure</i>				
<i>Diabetes</i>				
<i>Physical Activity</i>				
<i>Cholesterol</i>				
<i>Mental Exercise</i>				
<i>Concuss/Boxing</i>				
<i>Low fat</i>				
<i>Vitamin E</i>				

# Alzheimer Association

## Potential Interventions / Risk Factors

### Opinions of an Expert Panel

#### Levels

- I. >95% - Strong Clinical Trials Results & FDA Approval
- II. >80% - Strong Epidemiological Evidence; but no clinical confirmation
- III. >70% - Good Epidemiological Evidence; but no clinical confirmation
- IV. >50% - Preliminary Epidemiological Evidence; further confirmation needed
- V. <50% - Promising results in need of further studies
- VI. No Data

# Alzheimer Association

## Potential Interventions / Risk Factors

### Opinions of an Expert Panel

<i>INTERVENTIONS RISK FACTORS</i>	<i>SYMPTOM RELIEF</i>	<i>DISEASE PROGRESSION</i>	<i>PREVENTION</i>	<i>SECONDARY BENEFIT<sup>[1]</sup></i>
<i>ChEIs</i>	Level I			
<i>Memantine</i>	Level I			
<i>Ibuprophen/NSAID</i>	Level VI	Level IV	Level VI	
<i>Statins</i>	Level VI	Level IV	Level VI	Level IV
<i>Head injury</i>		Level II	Level VI	Level II
<i>Blood pressure</i>		Level III	Level VI	Level III
<i>Diabetes</i>		Level III	Level VI	Level III
<i>Physical Activity</i>		Level III	Level VI	Level III
<i>Cholesterol</i>		Level III	Level VI	Level III
<i>Mental Exercise</i>		Level III	Level VI	Level III
<i>Concuss/Boxing</i>			Level VI	Level IV
<i>Low fat</i>		Level VI	Level VI	Level V
<i>Vitamin E</i>		Level V	Level VI	Level V



# Alzheimer Association

## Potential Interventions / Risk Factors

### Opinions of an Expert Panel

<i>INTERVENTIONS RISK FACTORS</i>	<i>SYMPTOM RELIEF</i>	<i>DISEASE PROGRESSION</i>	<i>PREVENTION</i>	<i>SECONDARY BENEFIT<sup>(1)</sup></i>
<i>Wine</i>		Level VI	Level VI	Level V
<i>Vitamin C</i>		Level VI	Level VI	Level V
<i>Blueberries</i>		Level VI	Level VI	Level V
<i>Folic acid</i>		Level VI	Level VI	Level V
<i>Ginkgo</i>		Level VI	Level VI	Level V
<i>Protein diet</i>		Level VI	Level VI	Level V
<i>Estrogen</i>		Level VI	Level VI	
<i>Estrogen+</i>		Level VI	Level VI	
<i>Stress</i>		Level VI	Level VI	Level V
<i>Copper</i>		Level VI	Level VI	

**AARP**

**National Retired Teachers Association  
(Educational Arm of AARP)**

Staying Sharp Program  
Promoting Cognitive Health  
50+

(Collaboration with Dana Foundation)

# Increasing Interest in Maintenance of Function

- I. Increasing interest in intervention prior to disease
- II. Increasing interest in maximizing function
- III. Interest in taking more control over health care and health outcomes
- IV. Requires longitudinal perspective
- V. Requires study of multiple interacting factors
- VI. Requires the efforts of the Healthy Brain Initiative of NIA / NINDS/ NIMH