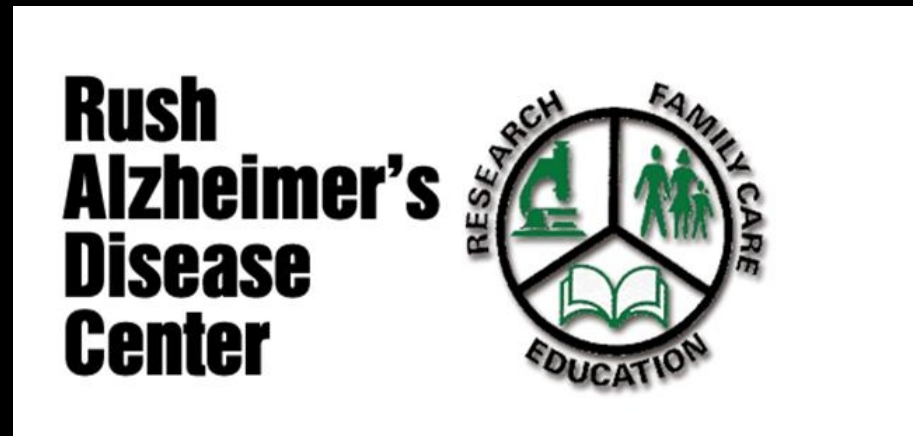


# Culture, stress and impact on cognitive performance

**Lisa L. Barnes, PhD**

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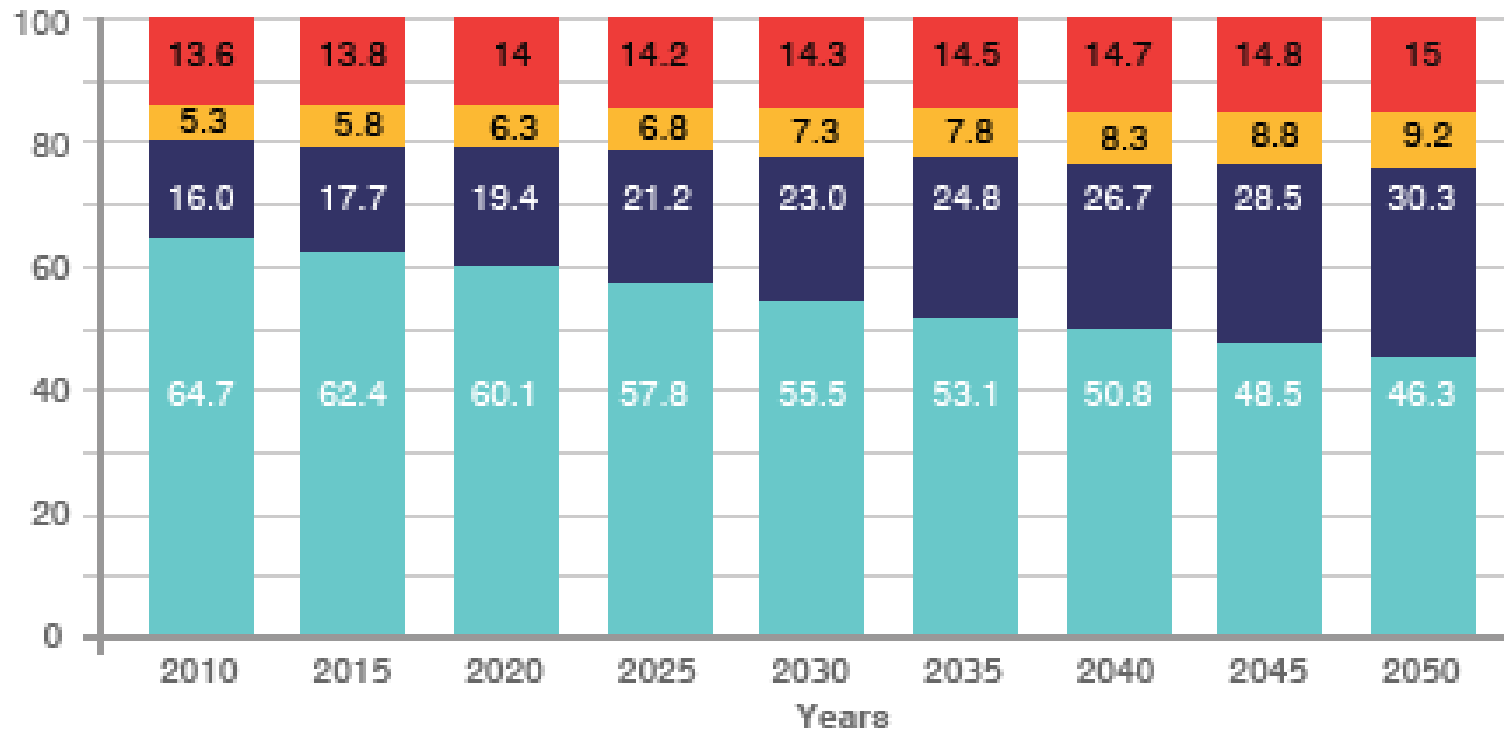
# Presenter Disclosures

Lisa L. Barnes has no disclosures.

# U.S. is becoming increasingly diverse

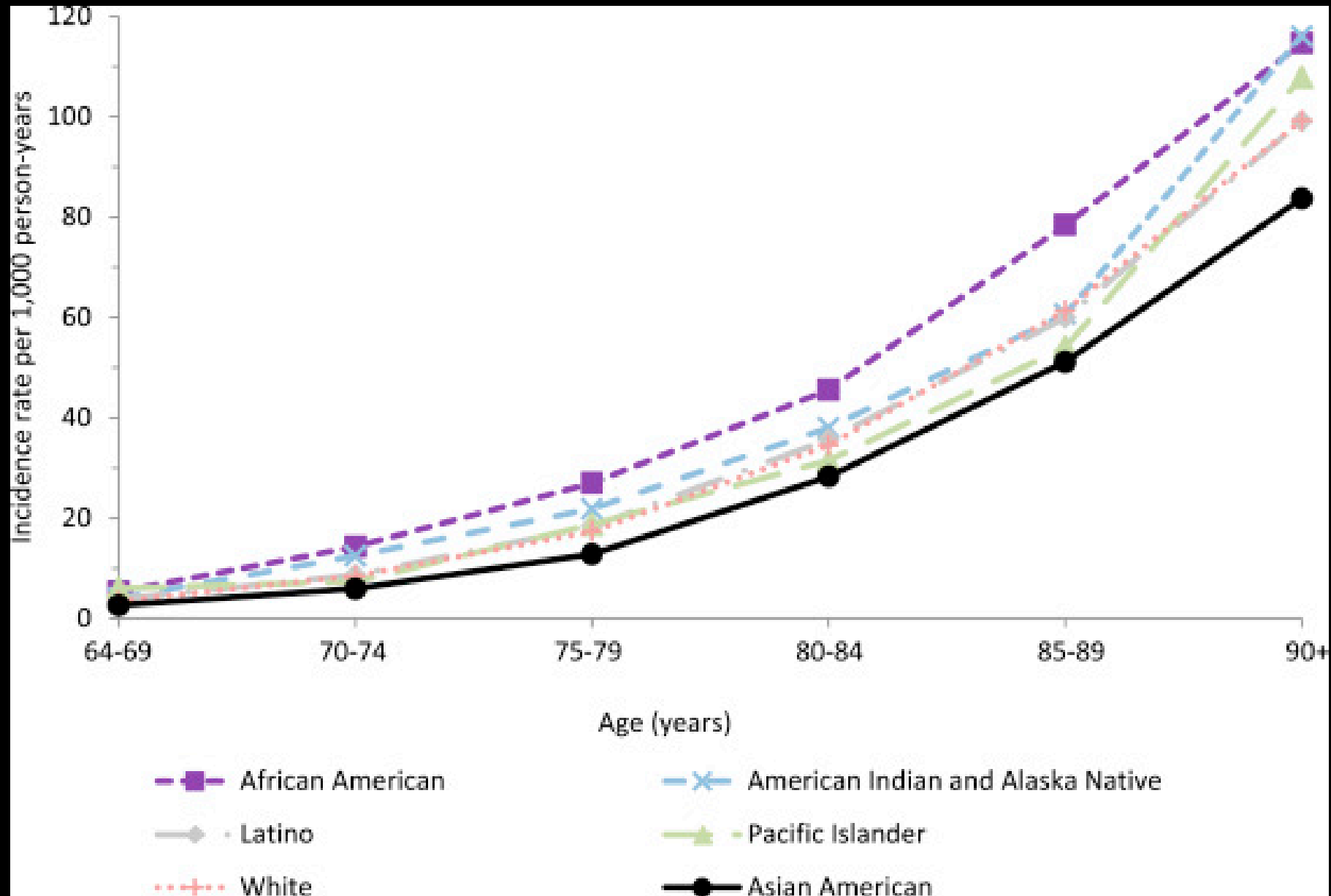
## US POPULATION PROJECTIONS TO 2050

Percentage by race and Hispanic origin



SOURCE: US Census Bureau

# Dementia incidence rates by age and ethnicity



# Why are minority populations at greater risk?

- Genetics?
- Differential burden of vascular disease?
- Stigma or mistrust; fail to engage with medical system?
- Stress?



# What is stress?

- Your mind and body's response/reaction to a real or imagined threat, insult, event, or change in environment (stressors)
- Stressors can be external or internal

## External

- Loss
- Tragedy
- Changing jobs or moving

## Internal

- Thoughts
- Beliefs
- Attitudes

# Types of Stressors



INJURY



Emotional



Career Pressures



Illness



Physical



Environmental





Cultural experiences – historical AND current are important and can have an impact on how we age





# Minority Aging Research Study (MARS)

- Began enrollment in August 2004
- Volunteer cohort
- >750 African Americans, >65 years, enrolled without [known] dementia
- Recruited from churches, senior buildings & organizations
- Annual in-home cognitive testing, risk factor assessment, and blood draw
- Follow-up rate > 90% among survivors (up to 14 years follow-up)
- Recruitment for autopsy (optional); 46% have agreed

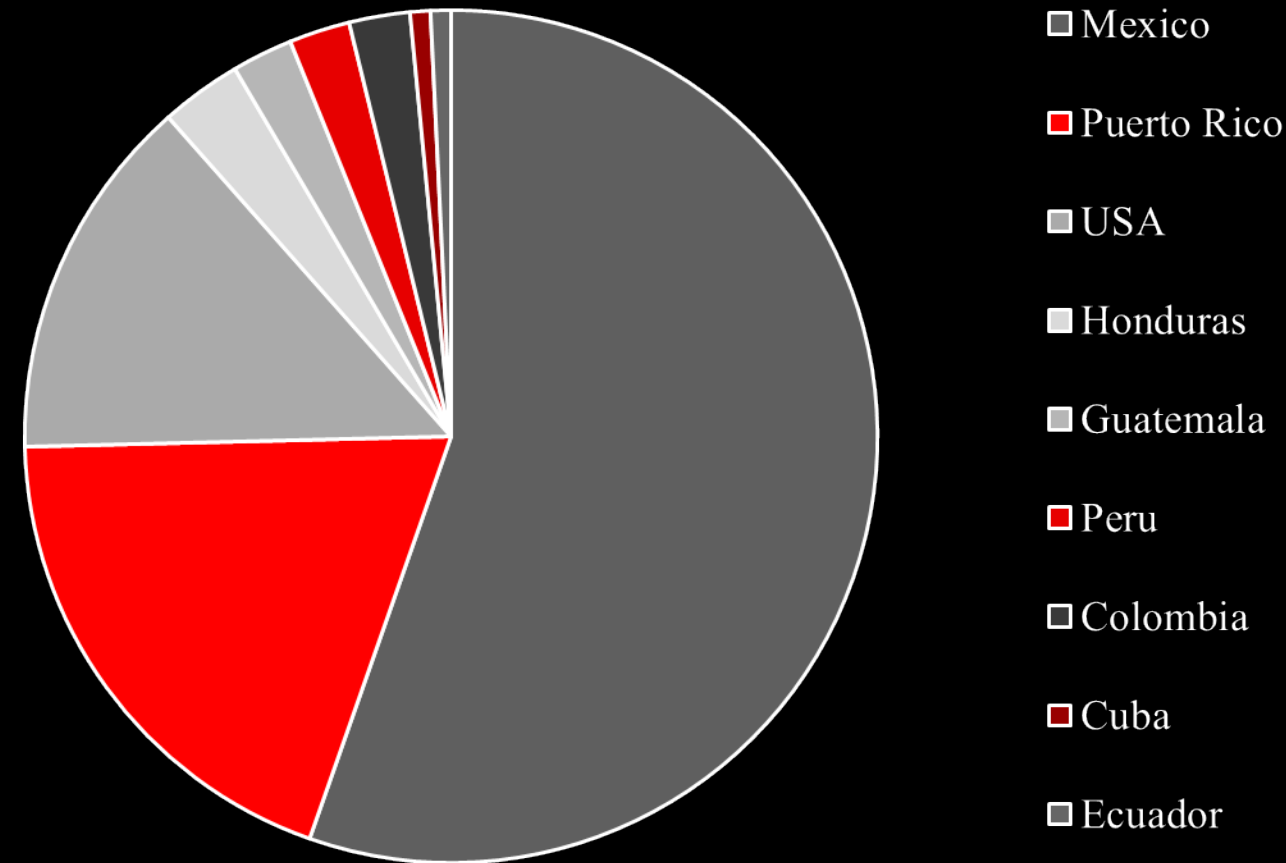


# Latino Core (2016)



- >200 enrolled
- Inclusion criteria are:
  - Older Latinos/Hispanics
  - No known dementia diagnosis
  - Willing to donate blood
  - Willing to consider organ donation
- Participants represent 36 Chicago communities and 30 suburbs

Participants represent 9 countries from Latin America



# Psychosocial Stressors and cognition

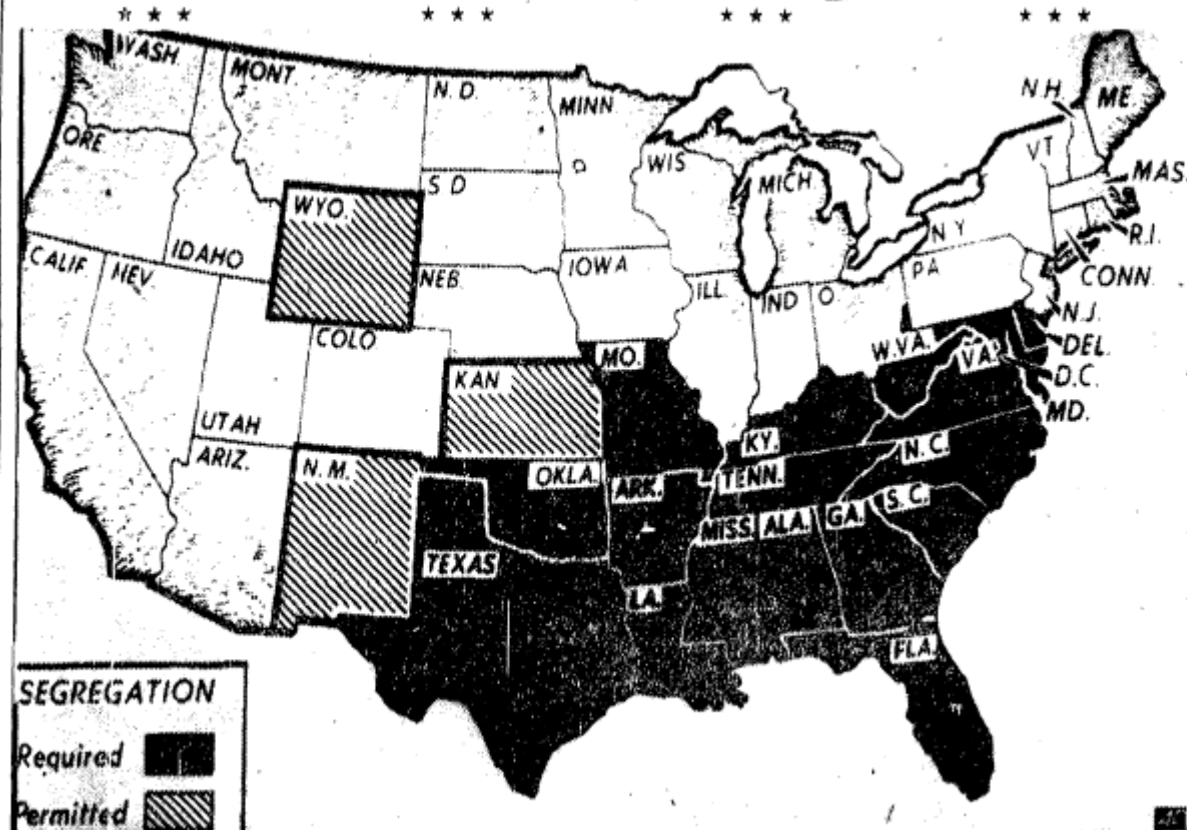
School segregation  
Perceived discrimination  
Perceived Stress

# Education and Cognition in minority populations

- Years of education correlates with higher cognitive function
- But the association varies across years of education
- Educational quality – may be a better predictor of cognitive function
  - Literacy
  - School location (urban/rural; region of country)
  - School Expenditures
  - Length of primary school term
  - Number school days attended
  - Student-teacher ratio

# Education in 1930s - 1954

## School Segregation Outlawed



**SEGREGATION**  
Required [Solid Black Box]  
Permitted [Hatched Box]

STATES AFFECTED BY COURT RULING ON SEGREGATION—Dark area of map includes states requiring segregation of pupils, while shaded portion locates three states where segregation is permissive. The Supreme Court in Washington yesterday voted unanimously against segregation. The court ruled separate educational facilities are inherently unequal and do not provide privileges guaranteed under 14th amendment.—AP wirephoto.

## Chief Justice Reads Historic Decision; Vote Was Unanimous

### Ruling Does Not End Segregation At Once; Further Hearings Set To Decide How to Halt Practice

By HERB ALTSCHULL

WASHINGTON, May 17 (AP)—The Supreme Court ruled today that the states of the nation do not have the right to separate Negro and white pupils in different public schools.

By a unanimous 9-0 vote, the high court held that such segregation of the races is unconstitutional.

Chief Justice Warren read the historic decision to a packed but hushed gallery of spectators nearly two years after Negro residents of four states and the District of Columbia went before the court to challenge the principle of segregation.

The ruling does not end segregation at once. Further hearings were set for this fall to decide how and when to end the practice of segregation. Thus a lengthy delay is likely before the decision is carried out.

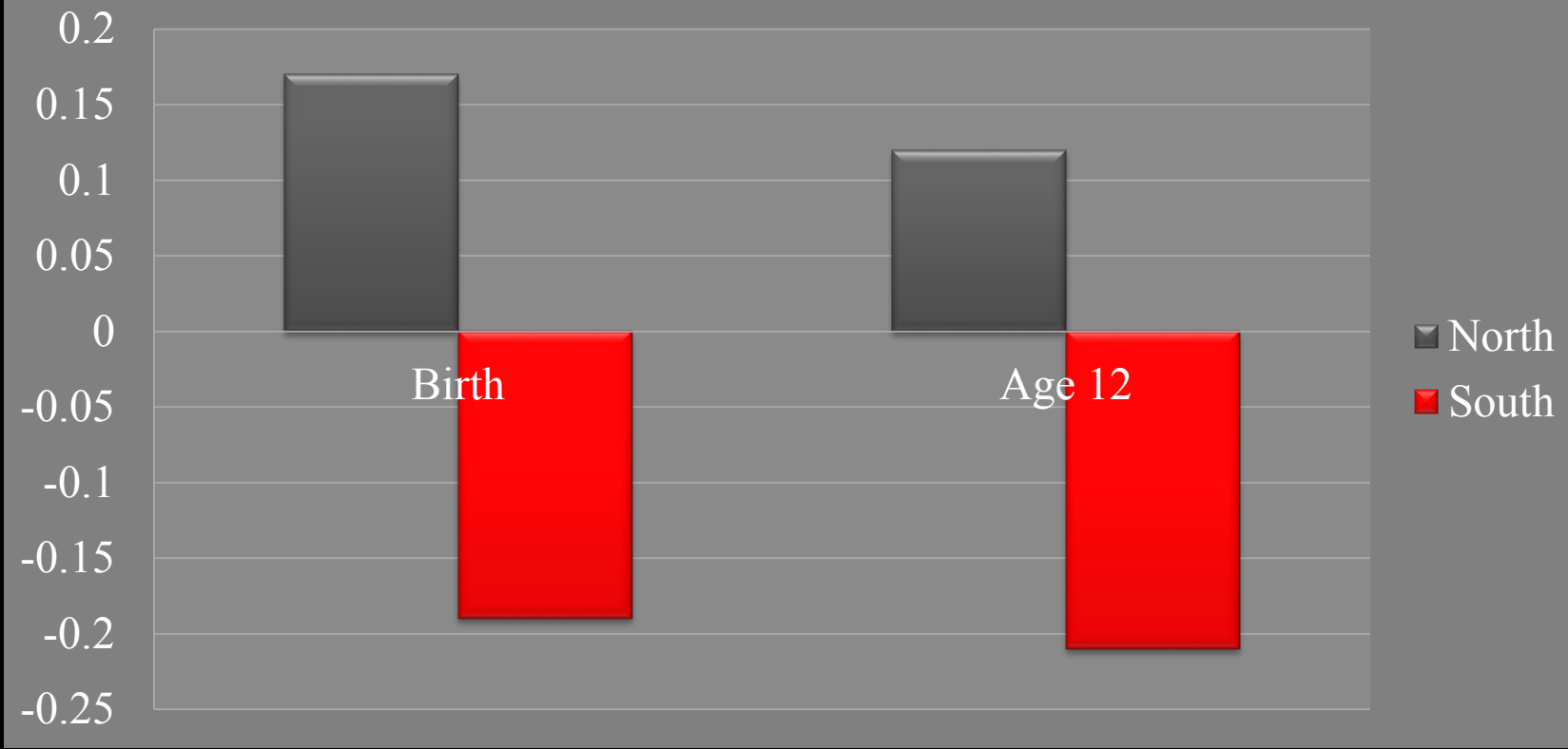
Dean Acheson, secretary of state under Former President Harry Truman, was in the courtroom to hear the ruling. He called it "great and statesmanlike."

Atty. Gen. Brownell was also present. He declined comment immediately. Brownell and the Eisenhower administration, like Truman's, opposed segregation. For years 17 Southern and "border" states have imposed

presented: Does segregation of children in public schools solely on the basis of race, even though the physical facilities and other "tangible" factors may be equal, deprive the children of the min-

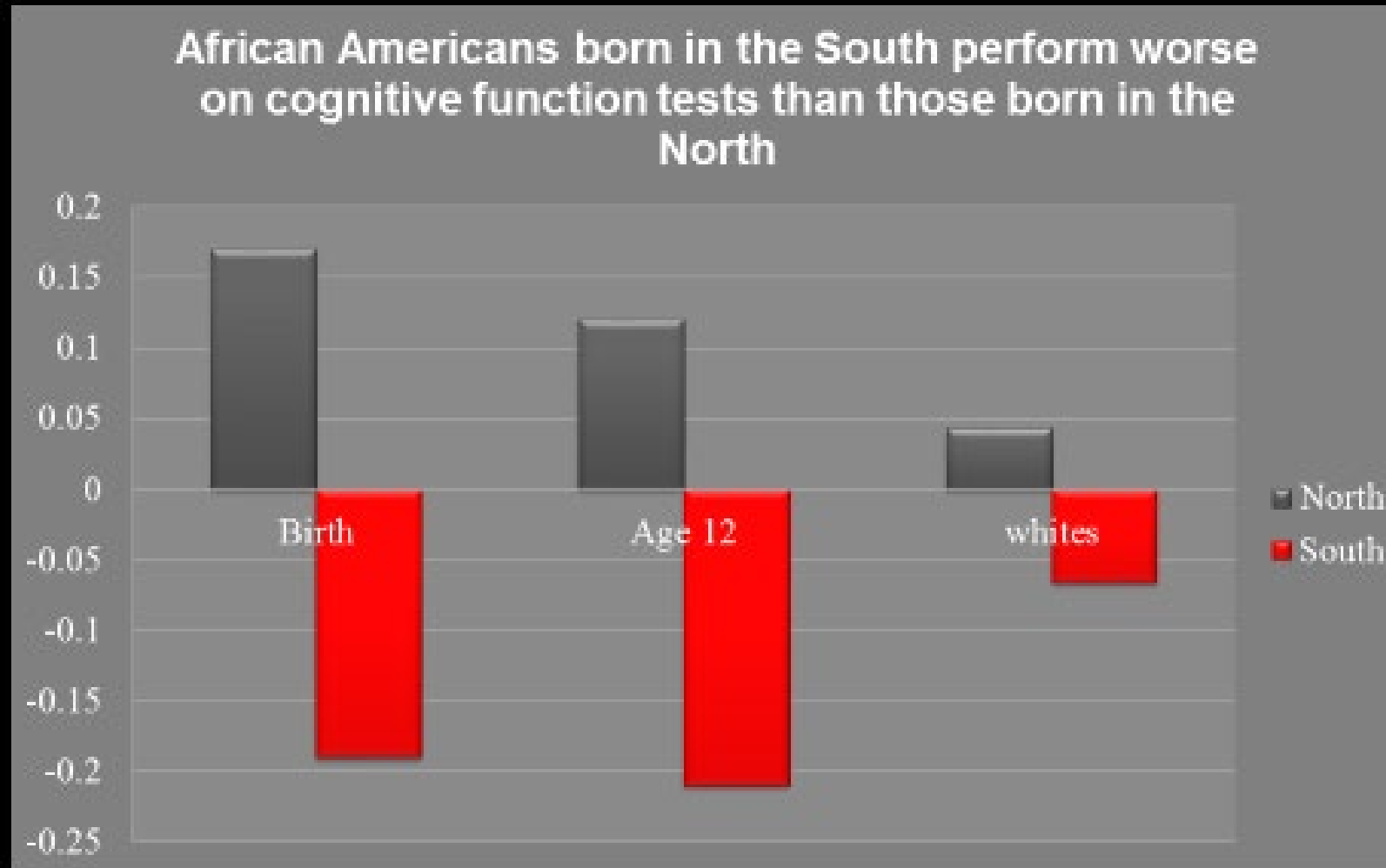
# Early life residence and cognition

African Americans from the South perform worse on cognitive function tests than those from the North

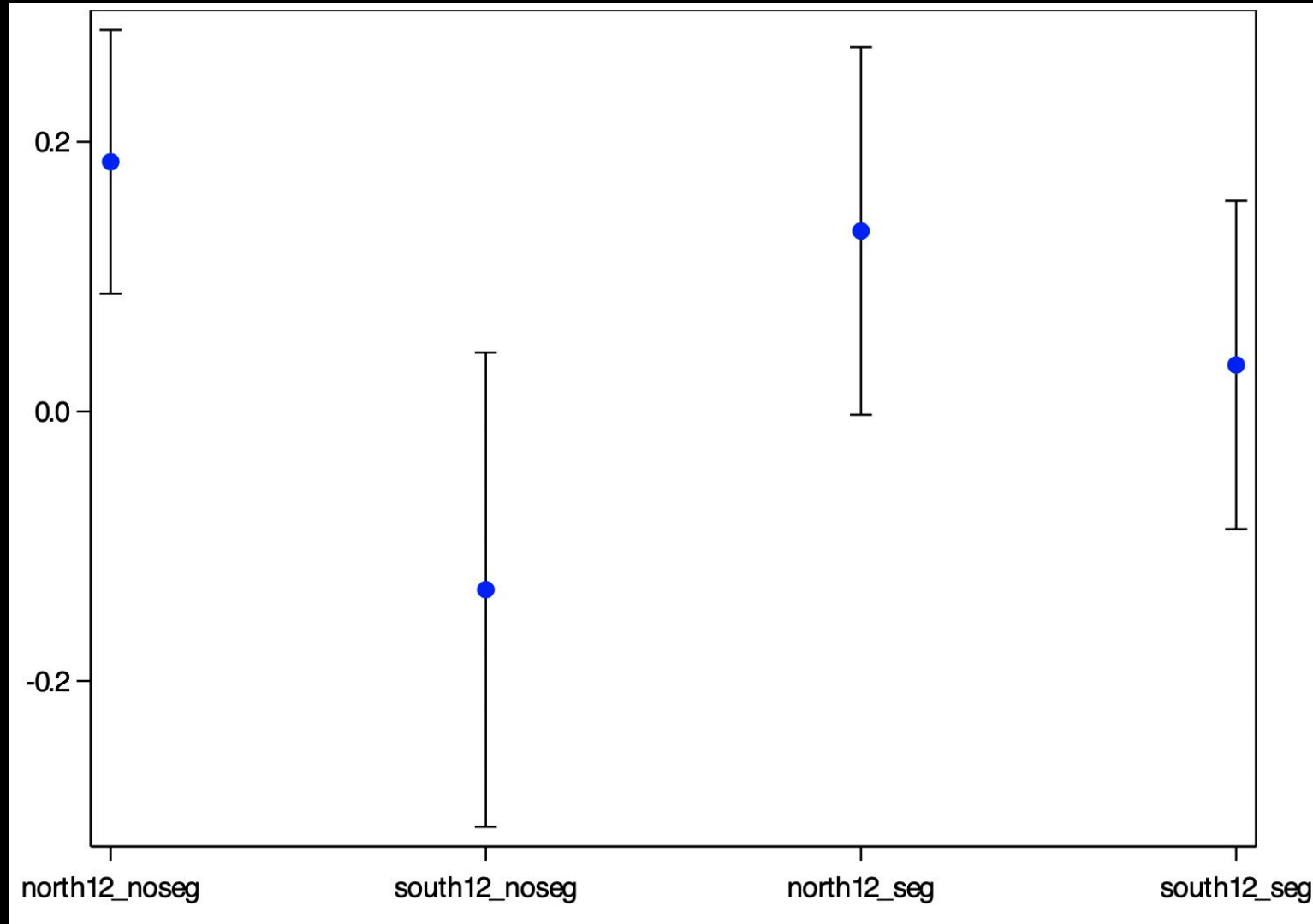




# Early life residence and cognition

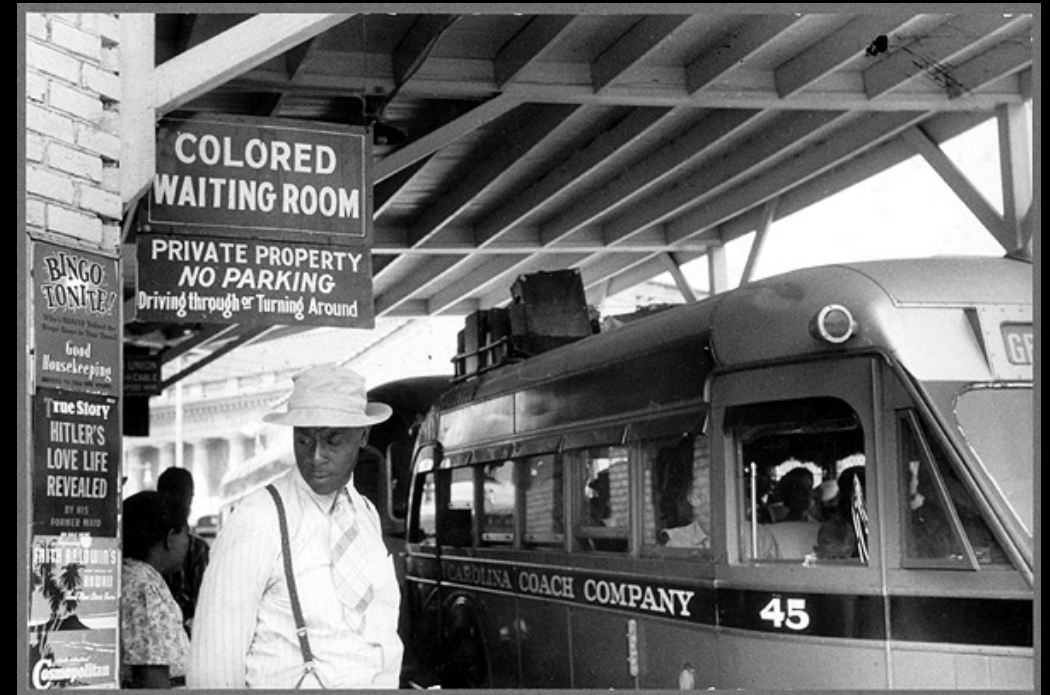


# African Americans from non-segregated schools from the South perform the worse on a composite measure of global cognition



# Perceived Discrimination

- Discrimination is an important psychosocial stressor with links to adverse health outcomes
- Some, but not all studies have found it partially explains disparities in health



# Every Day Discrimination

---

In your day-to-day life how often do these happen to you?

- You are treated with less courtesy than other people.
  - You are treated with less respect than other people.
  - You receive poorer service than other people at restaurants or stores.
  - People act as if they think you are not smart.
  - People act as if they are afraid of you.
  - People act as if they think you are dishonest.
  - People act as if they're better than you are.
  - You are called names or insulted.
  - You are threatened or harassed.
-

## Perceived discrimination is associated with worse cognition, particularly episodic memory & perceptual speed

Variables	Global cognition	Episodic memory	Perceptual speed
Age	-0.02 (.004)**	-0.03 (.004)**	-0.04 (.005)**
Sex	-0.08 (.052)	-0.17 (.064)*	-0.17 (.076)*
Education	0.07 (.007)**	0.04 (.008)**	0.09 (.010)**
Discrimination	<b>-0.02 (.010)*</b>	<b>-0.03 (.013)*</b>	<b>-0.04 (.015)*</b>

\*\*=p<.01; \*=p<.05

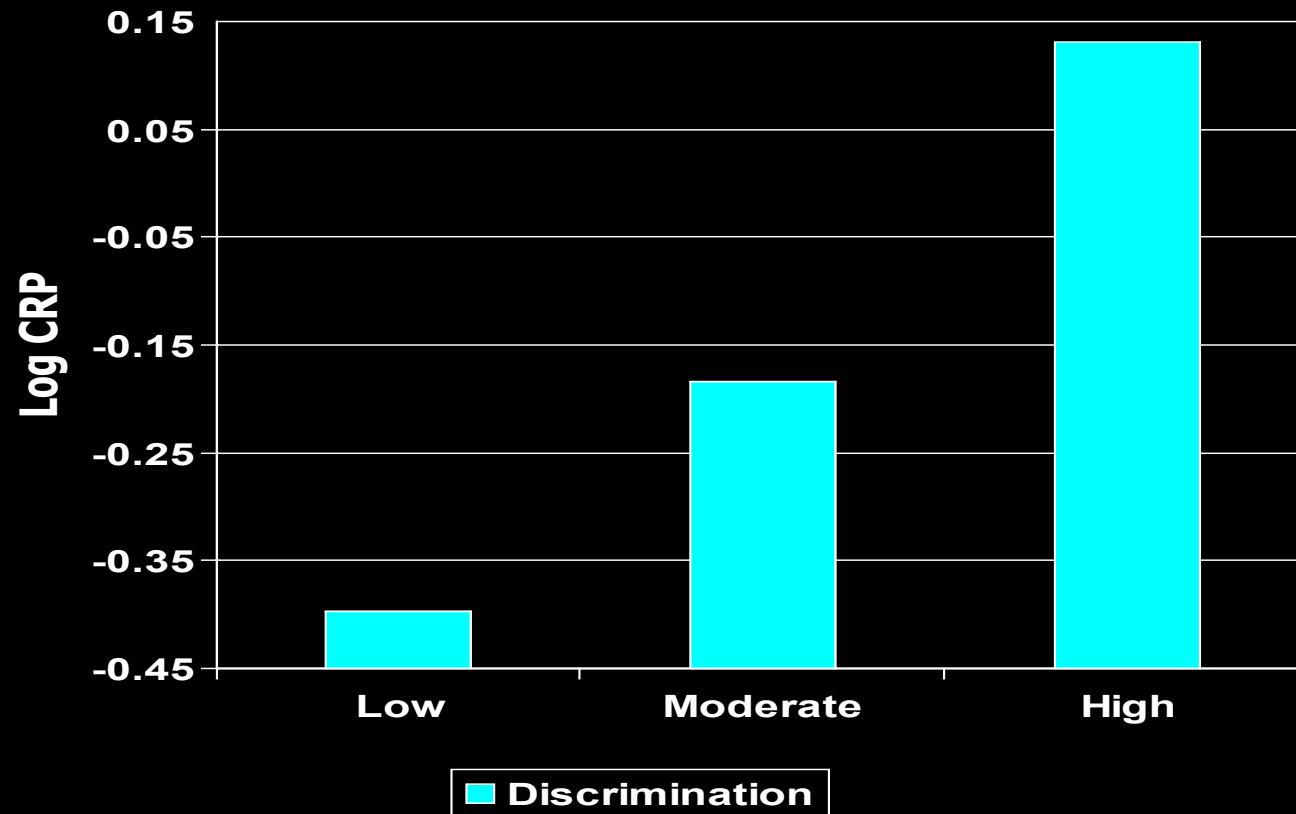
Much of the association explained by depressive symptoms

# Perceived discrimination is associated with worse cognition in Latinos, but no association of acculturation

Variables	Global	Episodic	Semantic	Working	Perceptual
Discrimination	-0.06 (0.02)**	-0.06 (0.03)*	0.06 (0.03)*	-0.07 (0.03)*	-0.07 (0.02)**
Acculturation	0.09 (0.06)	0.09 (0.09)	0.13 (0.10)	0.05 (0.09)	0.09 (0.08)
Disc x Time	NS	NS	NS	NS	NS
Accult x Time	NS	NS	NS	NS	NS

\*\*=p<.01; \*=p<.05

# Discrimination and CRP



Self-reported experiences of everyday discrimination are associated with elevated C-reactive protein levels in older African-American adults

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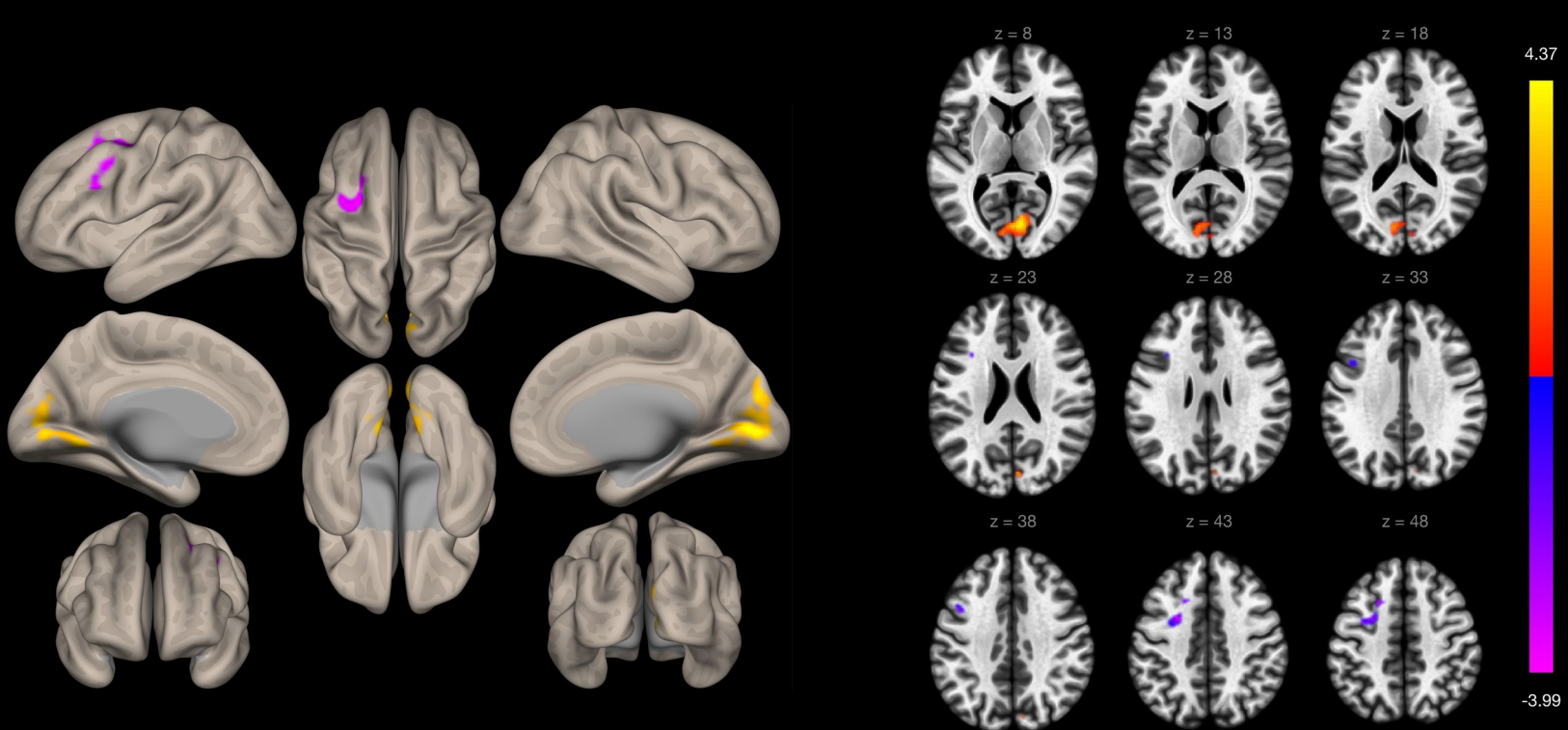
<sup>c</sup> Rush Alzheimer's Disease Center, Rush University Medical Center, Chicago, IL, USA

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# Perceived Discrimination and Resting-State fMRI



Perceived discrimination associated with (1) less functional connectivity of the left insula to the dorsolateral prefrontal cortex, and (2) greater functional connectivity of the left insula to the visual cortex

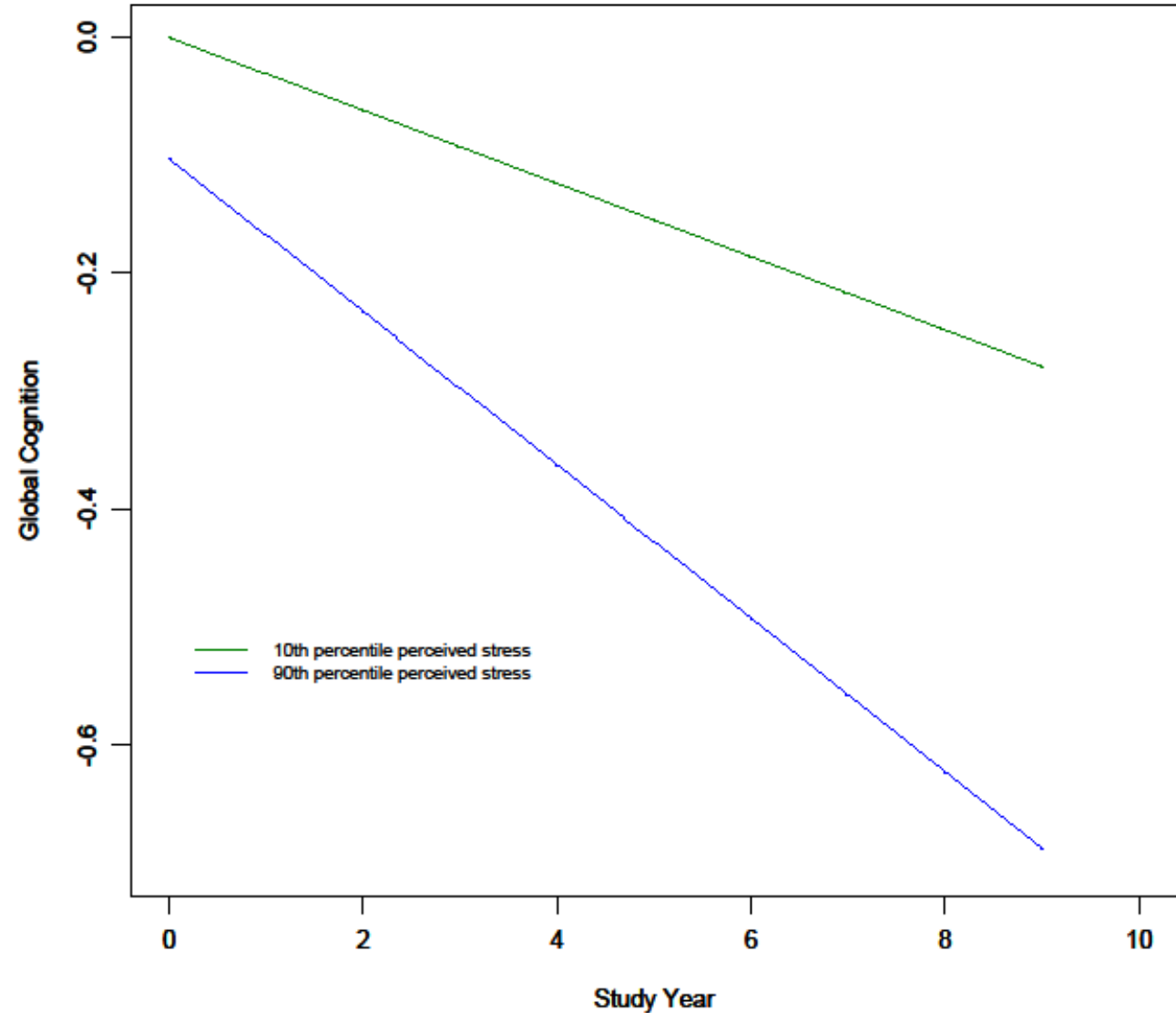


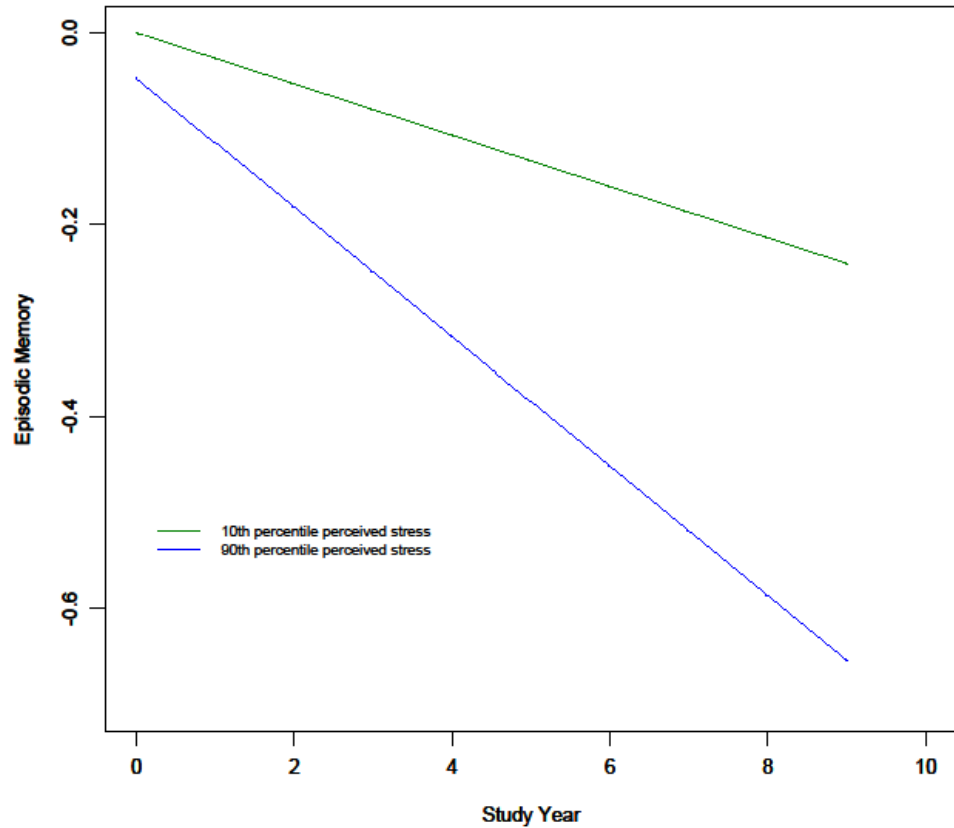
# Correlates of Perceived Stress (MARS)

degree to which a person finds their lives unpredictable, uncontrollable, and overloading

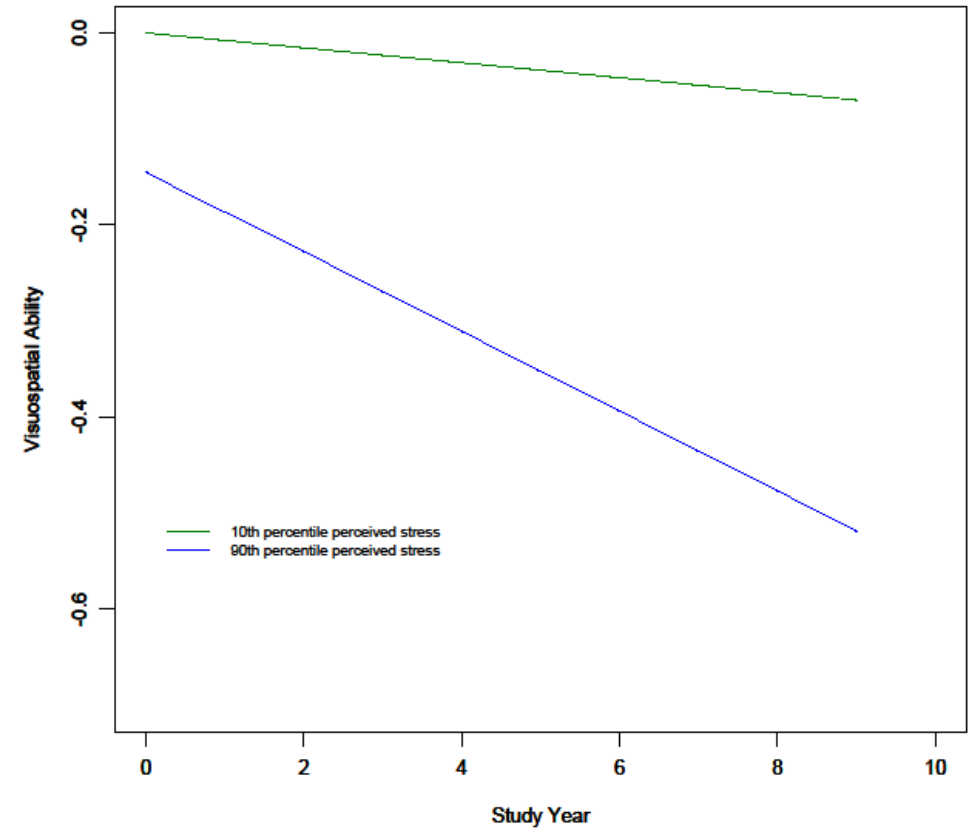
<b>Predictor Variable</b>	<b>Parameter Estimate</b>	<b>Standard Error</b>	<b><i>p-value</i></b>
<b>Depressive Symptoms</b>	0.20	0.06	< 0.001
<b>Neuroticism</b>	0.07	0.02	< 0.001
<b>Financial Burden</b>	0.39	0.06	< 0.001
<b>Social Network</b>	-0.03	0.02	0.04
<b>Life Space</b>	-0.29	0.10	0.004
<b>Purpose in Life</b>	-0.62	0.22	0.006

# Perceived stress is related to faster decline





Episodic memory



Visuospatial Ability

# Conclusions

- Psychosocial stressors are important factors to consider in cognitive function of minority elders
- Socio-cultural history of minority populations may be a unique stressor that lowers cognitive function
- To the extent that some psychosocial factors are modifiable, may represent a strategy to slow decline, and potentially delay the onset of dementia

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Latino Core  
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Religious Orders Study

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