

# Cognitive Abilities

*What Changes with Age  
& Can We Improve?*

MIDUS

Midlife in the United States

A National Study of Health & Well-Being

# Cognitive Abilities

MIDLIFE IN THE UNITED STATES: A NATIONAL STUDY OF HEALTH AND WELL-BEING



## COGNITIVE ABILITIES HELP US:

- ▶ think quickly about complex information
- ▶ remember details
- ▶ react to new situations
- ▶ make decisions
- ▶ organize our lives



## MIDUS: First Nationwide Study

- ▶ A new MIDUS telephone interview made it possible to perform the first study of cognitive abilities on a national scale in a random sample of over 4,000 adults, 32-84 years old.
- ▶ Most previous studies were based on small groups of people evaluated in laboratories.
- ▶ MIDUS assessed thinking speed, reasoning ability, memory for numbers, and executive function (the ability to organize and coordinate ongoing mental tasks).

## COGNITIVE (Thinking) SKILLS VARY

### BY AGE

- ▶ Some older adults performed as well as younger adults on certain tests.
- ▶ On average, however, older adults took longer to complete the tests, especially the more difficult ones.



### BY GENDER

- ▶ Among younger groups, women did better than men on recalling a list of 15 words.
- ▶ Men outperformed women in finding patterns in number groups and reacting quickly to changing instructions.



### BY EDUCATION

- ▶ Those with more education performed better than those with fewer years of schooling, on all mental tasks.



FUNDED BY THE NATIONAL INSTITUTE ON AGING

# Can Cognitive Decline With Aging Be Prevented?

## MIDUS has an Important Message about Aging:

*There is wide variation in how much mental functioning declines with age.*

Some people in their 70s and 80s did as well as others in their 30s and 40s.

Six lifestyle factors were associated with people who performed as well as younger adults.



### Exercise Often

- ➔ Few studies have compared the effects of exercise at different ages. MIDUS found that moderate or vigorous exercise was beneficial to mental functioning in middle-age, and ***was most helpful for those in later life.***



### Challenge Your Mind

#### Improve Upon Your Education

- ➔ Among those with less education, those who engaged more frequently in mentally challenging activities, such as reading, writing, or word games, had faster reaction times on mental task switching tests.
- ➔ ***Mentally active people who had less education scored as well as highly educated people who were not mentally active.***

#### Welcome the Computer Age

- ➔ Those who used the computer less often had greater difficulty switching between mental tasks.
- ➔ This was more pronounced for men than women—***men who seldom used the computer showed the lowest overall cognitive scores of any group.***



### Be Socially Connected

- ➔ Those who had more contact with family, spent more time volunteering, or attended more monthly meetings, showed better mental functioning.

# 6

## LIFESTYLE TRAITS Can Lead to Better Mental Functioning



### 4

#### Stay in School

- ➔ Results showed that those with fewer years of education took longer to respond, especially on more difficult mental tasks.
- ➔ People with college degrees performed at the same speed as younger people with less education, in effect making **college educated people appear 10 years younger.**

#### Reduce Stress

##### Remain Calm

- ➔ Around 1,200 MIDUS participants provided daily reports of their stressful experiences (such as arguments, traffic problems, working long hours).
- ➔ Results showed that higher levels of stress were associated with poorer memory and having more distracting thoughts.
- ➔ **Those who were better able to remain calm under stress showed higher levels of mental functioning.**

### 5



##### Unwind at Bedtime

- ➔ Some MIDUS participants were tested for levels of cortisol, a hormone associated with stress.
- ➔ Results showed that a morning boost of cortisol was associated with higher mental functioning that helped people prepare for the day.
- ➔ **People who were unable to let go of problems at the end of the day had higher levels of cortisol at bedtime which were associated with lower mental performance.**

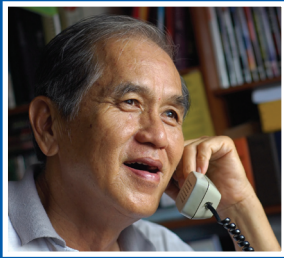
#### Believe You Can

- ➔ Those who believed that they are in control of their lives had better mental performance.
- ➔ Those with less education but a high sense of control had mental abilities similar to those with more education.
- ➔ Participants reported that their sense of control declined with age, while the number of obstacles they faced increased. However, **those with better mental functioning felt they faced fewer obstacles as they got older.**

**No matter what your age, now is the best time to begin avoiding age-related mental declines.**



**It's Never Too Soon to Start  
or Too Late to Improve!**



## Future Directions

MIDUS investigators will work to discover more factors that affect our mental abilities.

**Depression**, for instance, has been associated with lower mental functioning, but what is unclear is whether being depressed confuses our thinking or whether confused thinking makes us more likely to be depressed.

**Allostatic load**, the stress our bodies experience when we face multiple challenges, has also been linked to lower mental functioning, as well as higher death rates.

But we need to know what comes first. Poor health might lower our mental functioning through biological factors, or good mental abilities might lead to better health, such as by helping us remember to take medications regularly.

**When we know what factors contribute to better mental functioning, we can create interventions that will help people retain their mental abilities as they age.**

## Cognitive Testing in MIDUS

<b>Cognitive Area</b>	<b>Type of Test</b>
Verbal Memory	Recall a list of 15 words (ie., flower, truck, school)
Backward Memory Span	Repeat a span of 2 to 8 numbers backwards (i.e., 7, 2, 5, 3 = 3, 5, 2, 7)
Category Fluency	List as many animals as possible in 60 seconds
Numerical Reasoning	Complete the pattern in 5 series of 5 numbers (i.e., 35, 30, 25, 20, 15... correct answer = 10)
Speed of Processing	Count backward quickly from 100
Reaction Time (with and without switching between different instructions)	Say Go when interviewer says Green, Stop for Red & Reversed: Say Stop for Green, Go for Red

*MIDUS used a brief telephone interview to test mental processes that change with age and are central to everyday functioning in adults. Researchers checked to see if changes associated with age could be accounted for by factors not related to mental ability, such as poor hearing.*



## Thank You!

We are grateful to all MIDUS participants who continue to give so generously of their time to participate in our research. The data collected will help investigators continue to study mental functioning as a foundation for healthy aging.

## MIDUS—Midlife in the United States

Institute on Aging, University of Wisconsin-Madison  
2245 MSC, 1300 University Ave., Madison, WI 53706-1532  
Phone: (608) 262-2056 • Fax: (608) 263-6211  
Email: [aging@ssc.wisc.edu](mailto:aging@ssc.wisc.edu)

WEBSITE: <http://MIDUS.wisc.edu>

MIDUS  
Midlife in the United States