
Age Well Series
The Science of Purpose
How Meaning Supports Health & Well-Being
wiha
Wisconsin Institute for Healthy Aging

About WIHA

- **Mission**: To improve the health and well-being of all people as we age by disseminating evidence-based programs and practices and by engaging in collaborative public health strategies in Wisconsin and beyond.
- **https://wihealthyaging.org**
- **Age Well Newsletter**

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Introduction to Speaker

Stacey M. Schaefer, PhD

Leader, MIDUS
Neuroscience Project

University of Wisconsin,
Institute on Aging

The Science of Purpose
How Meaning Supports Health & Well-Being

Stacey M. Schaefer, Ph.D.
Institute on Aging
University of Wisconsin-Madison

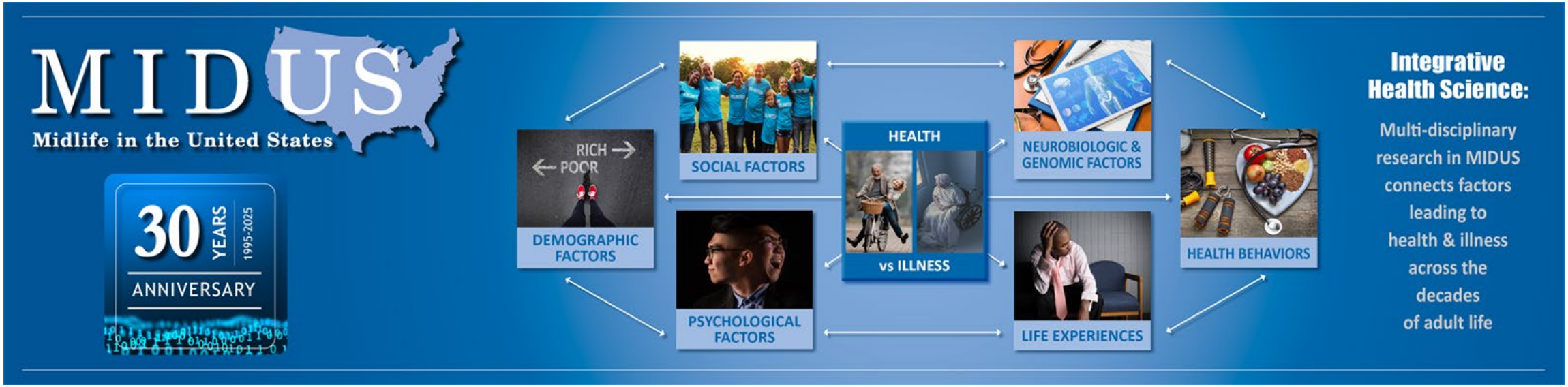
Who am I?

- Mom
- Wife
- Daughter
- Sister
- Friend
- Animal lover
- Gardener
- Scientist
- Mentor
- …..

My Educational & Work Background

- BS in Psychology and Zoology from University of Wisconsin-Madison
- PhD in Psychology (Cognitive Neuroscience) from University of Pennsylvania
- Affective Neuroscience Postdoc -> Scientist -> PI at UW-Madison
- I lead neuroscience studies investigating the

  socioemotional determinants of health, wellbeing, and aging


MIDUS
Midlife in the United States
30 YEARS
1995-2025
ANNIVERSARY
RICH
POOR
DEMOGRAPHIC FACTORS
SOCIAL FACTORS
PSYCHOLOGICAL FACTORS
HEALTH
vs ILLNESS
NEUROBIOLOGIC & GENOMIC FACTORS
LIFE EXPERIENCES
HEALTH BEHAVIORS
Integrative Health Science:
Multi-disciplinary research in MIDUS connects factors leading to health & illness across the decades of adult life

- Begun in 1995
- Aged 25-74
- More samples added including Black Americans from Milwaukee
- Now 35 - 100+
- Data publicly available www.midus.wisc.edu

Advancing Knowledge of Factors That Promote Positive Health and Resilience

MID-LIFE IN THE UNITED STATES

A National Study of Health and Well-Being

Unique Strengths of the MIDUS Study

In-depth multidisciplinary content *achieved via 5 separate data collection projects*

Wide age range (25–74) *facilitates focus on life course transitions*

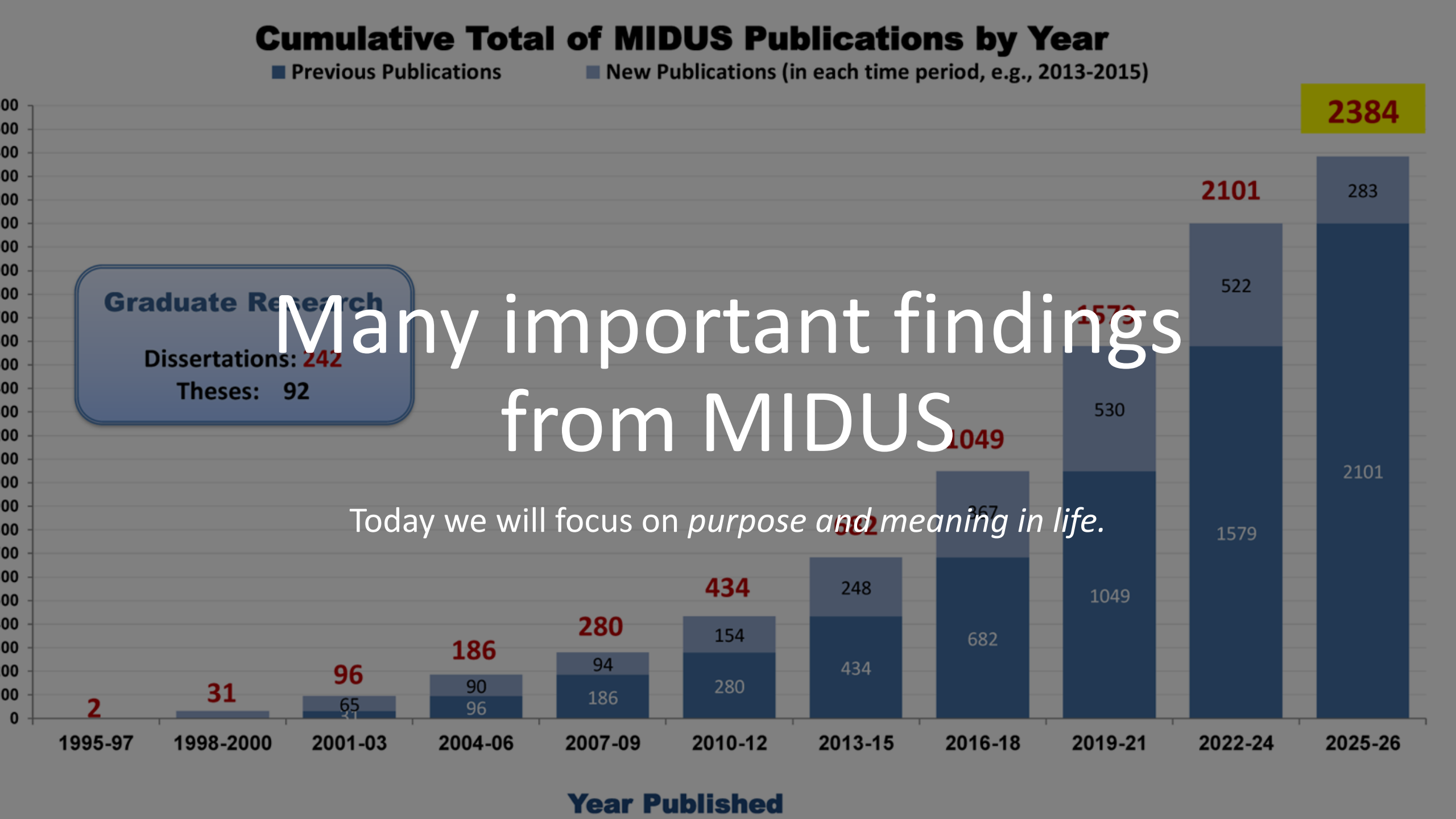
MIDUS (Midlife in the U.S.) is a national longitudinal study of how many factors (behavioral, social, psychological, biological, neurological) come together to influence health and well-being as people age from early adulthood into midlife and old age. It was conceived by a multidisciplinary team of scholars interested in understanding aging as an integrative process.

MIDUS Samples

In 1995, MIDUS survey data were collected from a total of 7,108 participants. The baseline sample was comprised of individuals from four subsamples: (1) a national RDD (random digit dialing) sample (n=3,487); (2) oversamples from

In addition, the twin subsample was administered a short screener to assess zygosity and other twin-specific information.

With funding provided by the National Institute on Aging, a longitudinal fol-


Cumulative Total of MIDUS Publications by Year
Previous Publications
New Publications (in each time period, e.g., 2013-2015)
Graduate Research
Dissertations: 242
Theses: 92
Many important findings from MIDUS
Today we will focus on *purpose and meaning in life*.
2384
2101
283
522
1579
2101
1049
530
1049
682
434
248
280
154
186
94
186
90
96
96
65
31
2
31
1995-97
1998-2000
2001-03
2004-06
2007-09
2010-12
2013-15
2016-18
2019-21
2022-24
2025-26
Year Published


What is
purpose in life?

What is *purpose in life*?

Feeling that one's life has meaning,
and having goals, intentions, and a sense of direction for one's life.

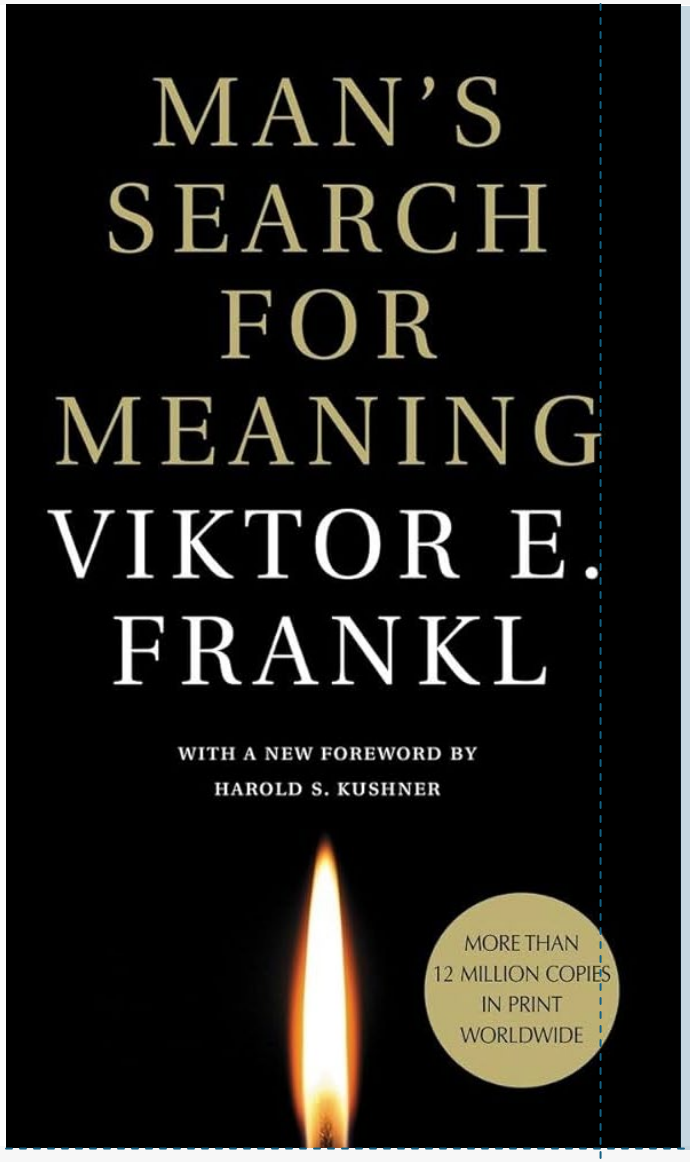
Purpose in life

“He who has a why to live can bear almost any how.”

Purpose in life

“He who has a why to live can bear almost any how.”

“Life is never made unbearable by circumstances, but only by lack of meaning and purpose… “



Purpose = Resilience

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Higher levels of purpose are associated with

- Better stress coping and emotion regulation (Schaefer et al. 2013, Sutin et al. 2025)
- Less loneliness, depression, and anxiety symptoms (Mei et al. 2021)

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- **Healthier lifestyle behaviors:**
  - **Healthy diet adherence** (Berkowitz et al. 2023)
  - **Better sleep** (Kim et al. 2015)
  - **More physical activity** (Sutin et al. 2023)

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  - More physical activity (Sutin et al. 2023)
- **Better cognition** (Bell et al. 2022)
- **Reduced risk of cognitive impairment, dementia, and Alzheimer's Disease** (Boyle et al. 2010, 2012)

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  - More physical activity (Sutin et al. 2023)
- Better cognition (Bell et al. 2022)
- Reduced risk of cognitive impairment, dementia, and Alzheimer's Disease (Boyle et al. 2010, 2012)
- **Reduced risk of cardiovascular events and all-cause mortality** (Cohen et al. 2016)

Purpose is important

Health benefits = better health behaviors (diet, sleep, activity), sharper memory and thinking skills, better mood control, reduced risk of chronic diseases and disability, & longevity

How do we measure Purpose in Life?

(Dr. Carol Ryff's Scales of Psychological Wellbeing)

Dr. Carol Ryff

How do we measure Purpose in Life?

(Dr. Carol Ryff's Scales of Psychological Wellbeing)

Dr. Carol Ryff

(-) I live life one day at a time and don't really think about the future.

(+) I have a sense of direction and purpose in life.

(-) I don't have a good sense of what it is I am trying to accomplish in life.

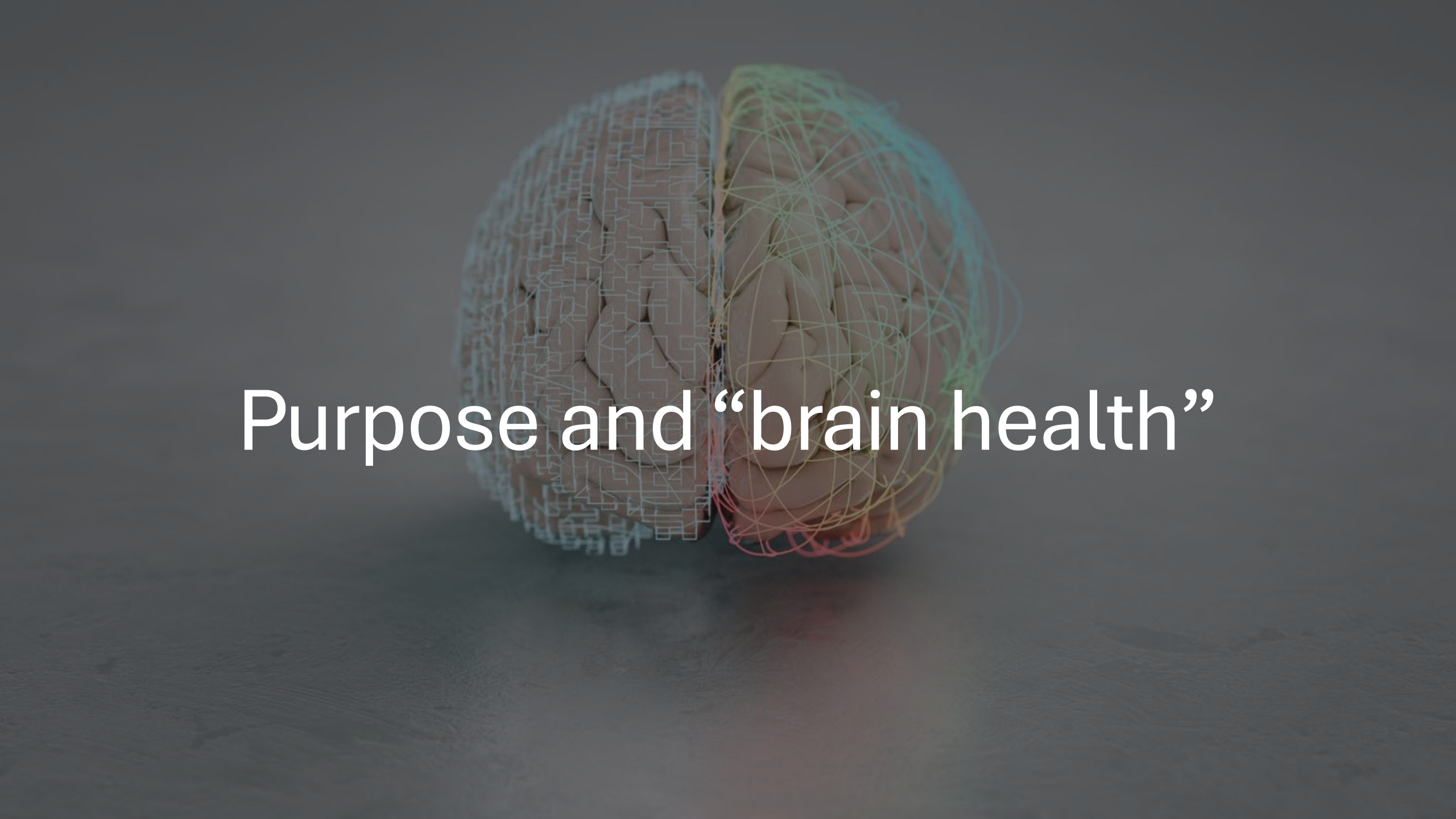
(-) My daily activities often seem trivial and unimportant to me.

(+) I enjoy making plans for the future and working to make them a reality.

(+) Some people wander aimlessly through life, but I am not one of them.

(-) I sometimes feel as if I've done all there is to do in life.

Items are rated from strongly agree to strongly disagree. Negative items reverse-scored.



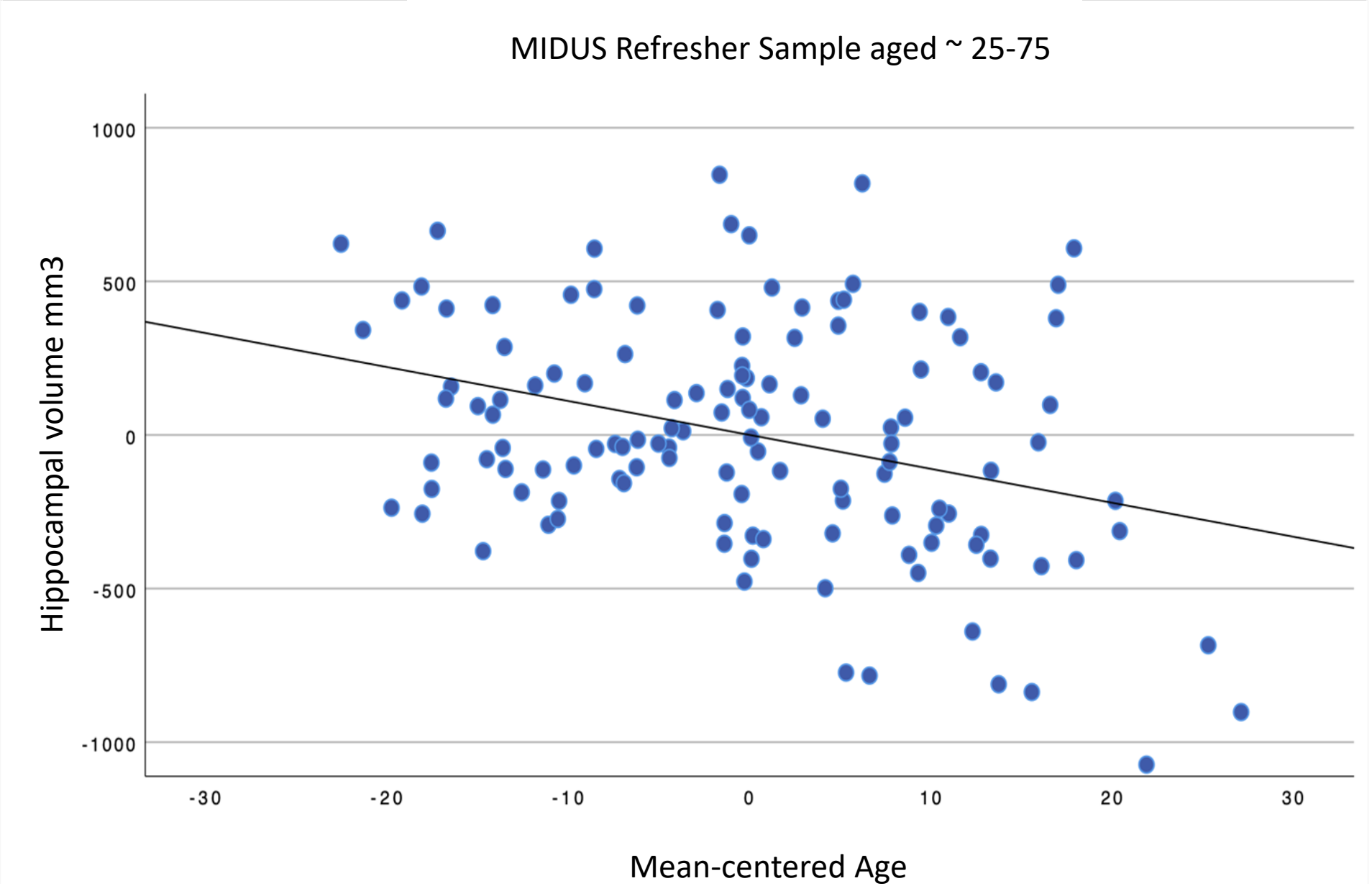
Purpose and “brain health”

The hippocampus

- Brain temporal lobe structure critical for learning, memory, and emotion.
- Plastic and vulnerable to aging & severe stress
- Impacted in neurological/psychiatric disorders
- Marker of brain health and brain aging

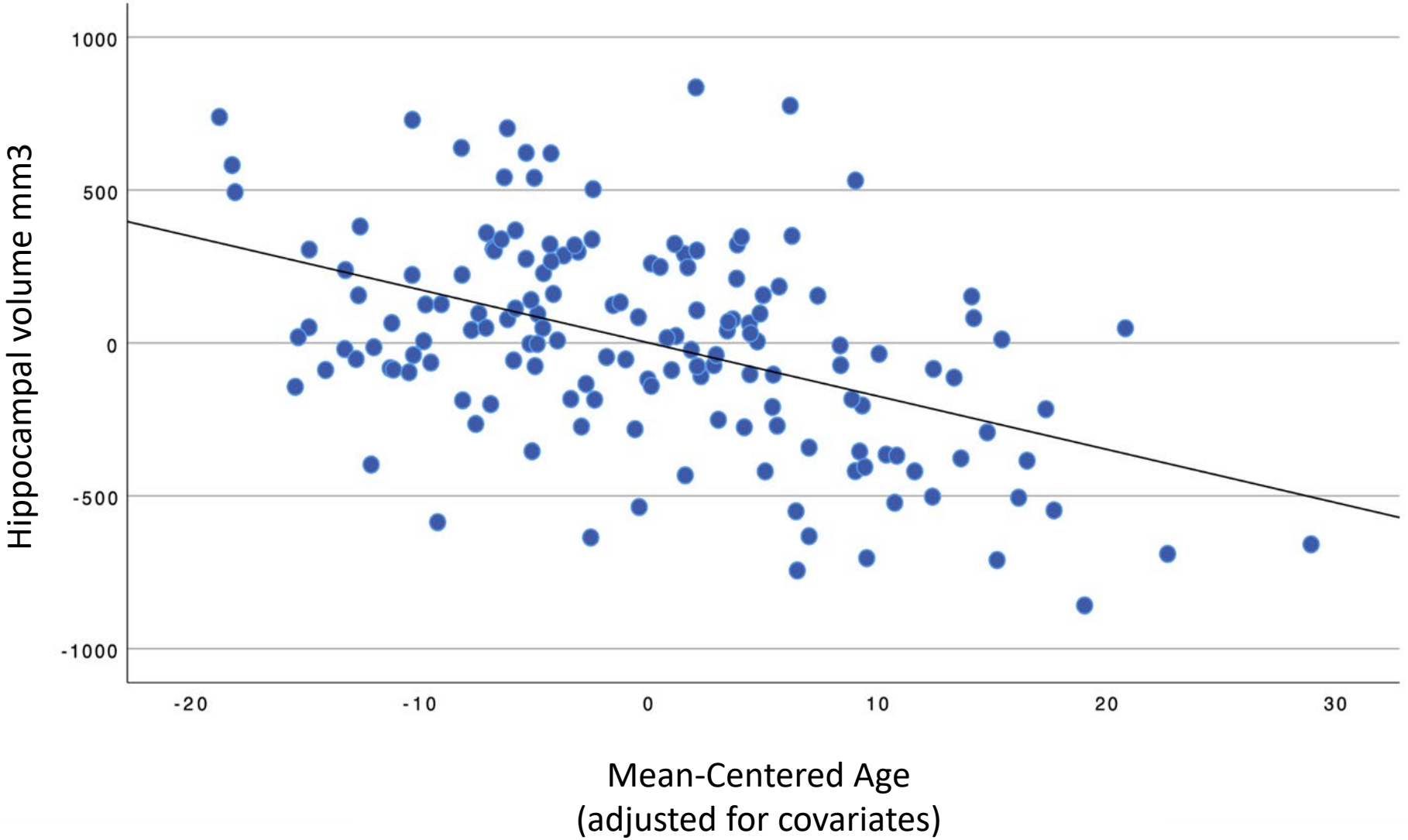
Gifs by Danielsabinasz generated using https://brain.sabinasz.net based on data from
Human Brain Mapping, 33(8), 1914-1928; Neuroimage, 47(1), S102; Neuroimage, 54(1), 313-327.
https://commons.wikimedia.org/w/index.php?curid=103151649

Hippocampal volume decreases with age.

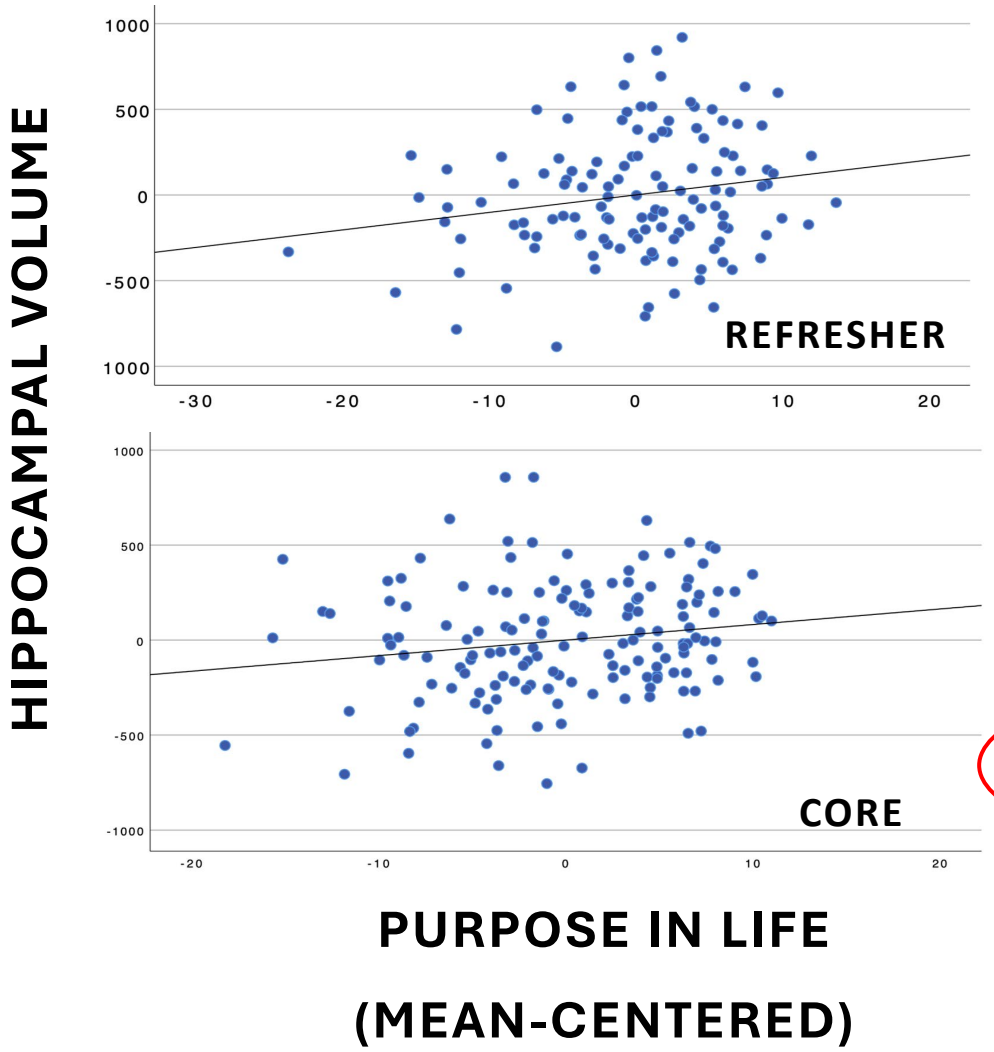


Hippocampal volume decreases with age.

MIDUS Core Sample aged ~45-95



Having more purpose in life is associated with larger larger hippocampal volumes in 2 samples.

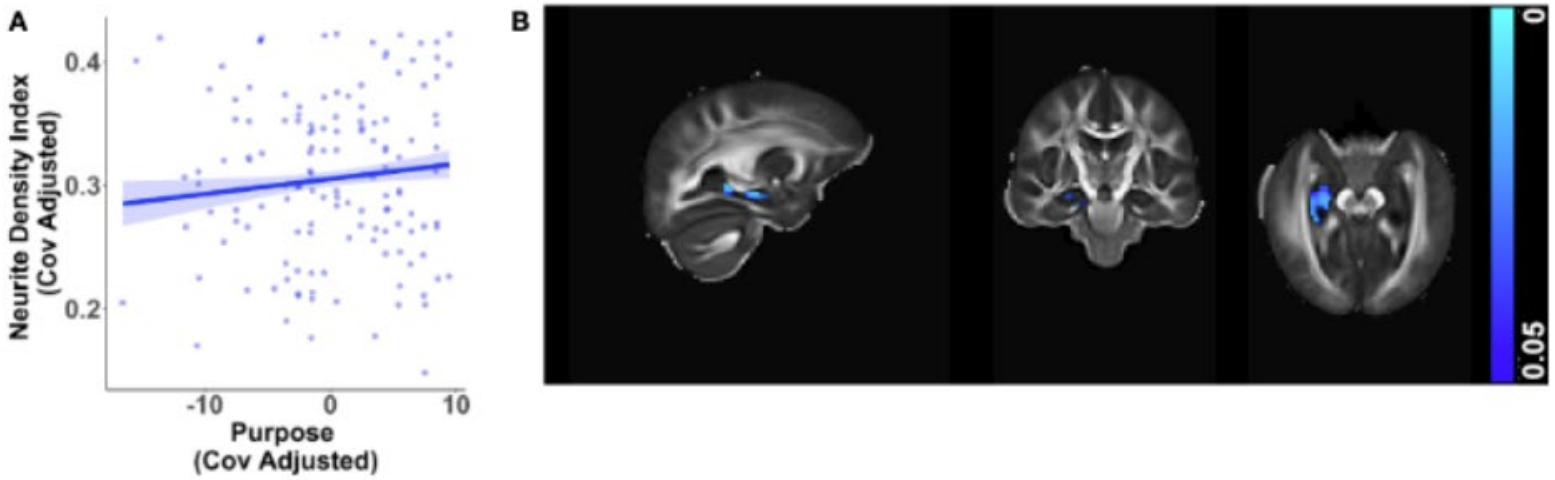


Regression Coefficients	Hippocampal Volume					
	M3 (n=154)			MR1 (n=127)		
IVs	B	SE B	ß	B	SE B	ß
Intracranial volume	.001	.000	.42†	.001	.000	.54†
Age	-17.52	2.70	-.42†	-10.75	2.88	-.27†
Sex	75.21	59.59	.10	39.82	88.48	.04
Race	102.97	63.38	.12	118.31	73.75	.12
Education	19.42	31.41	.04	-38.96	43.98	-.07
Time lag btw survey-MRI	.02	.04	.04	-.12	.13	-.07
Purpose in life	**8.10**	**4.02**	**.14***	**9.94**	**4.88**	**.15***
* p < .05 , † p < .001						

Feeling more purpose is associated with larger hippocampal volumes across adulthood.

Feeling more purpose is associated with healthier hippocampal microstructure

Work led by
Dr. Ajay Nair



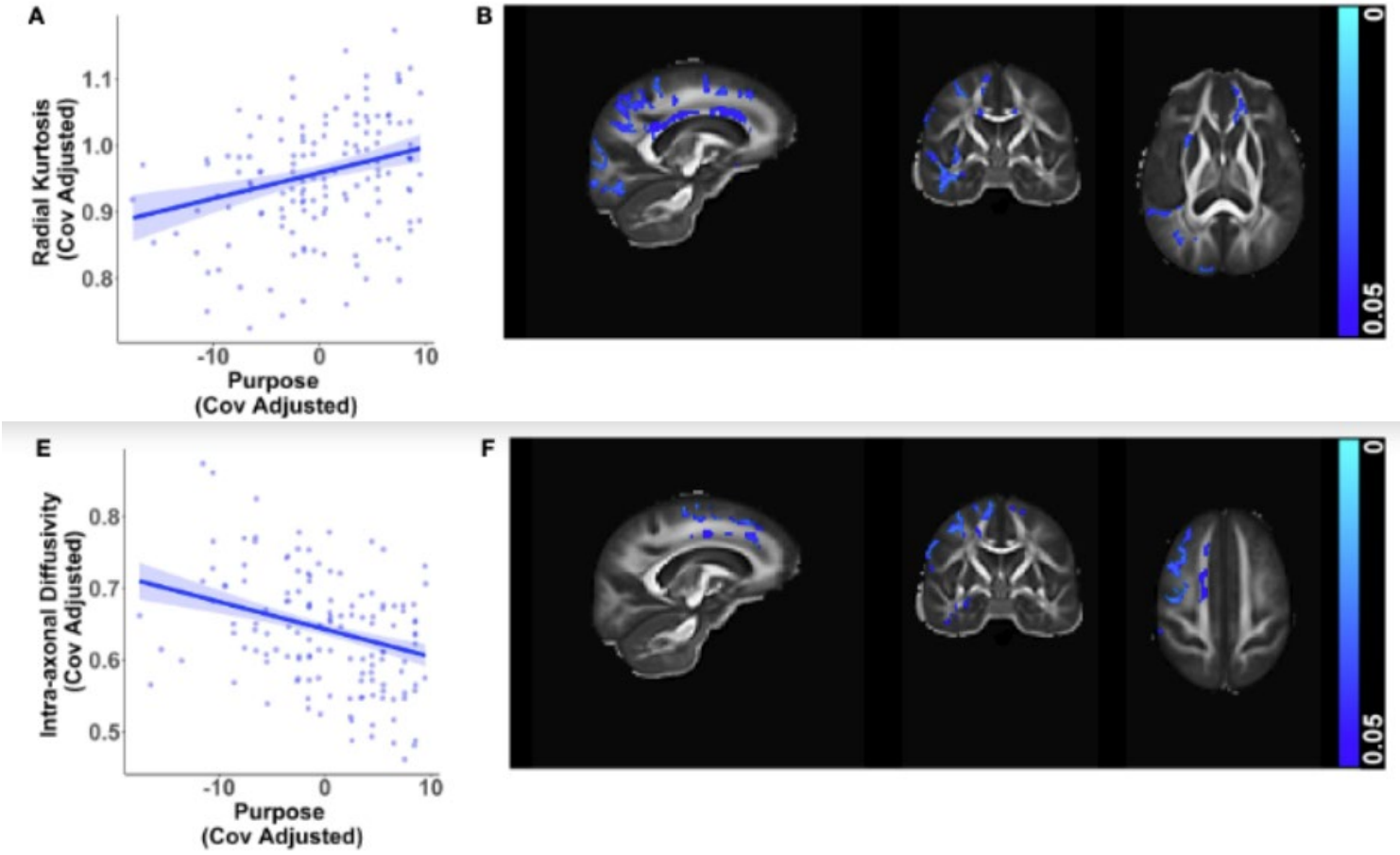
consistent with better brain health

- **neurite density index (b = 0.00122, p = 0.021)**
- **axonal water fraction (b = 0.00062, p < 0.001)**
- **radial kurtosis (b = 0.00267, p < 0.001)**
- **lower intra-axonal diffusivity (b = -0.00271, p = 0.019)**

Nair, et al. Front Psychiatry. 2024 Mar 5;15:1355998.

Feeling more purpose is associated with healthier white matter microstructure.

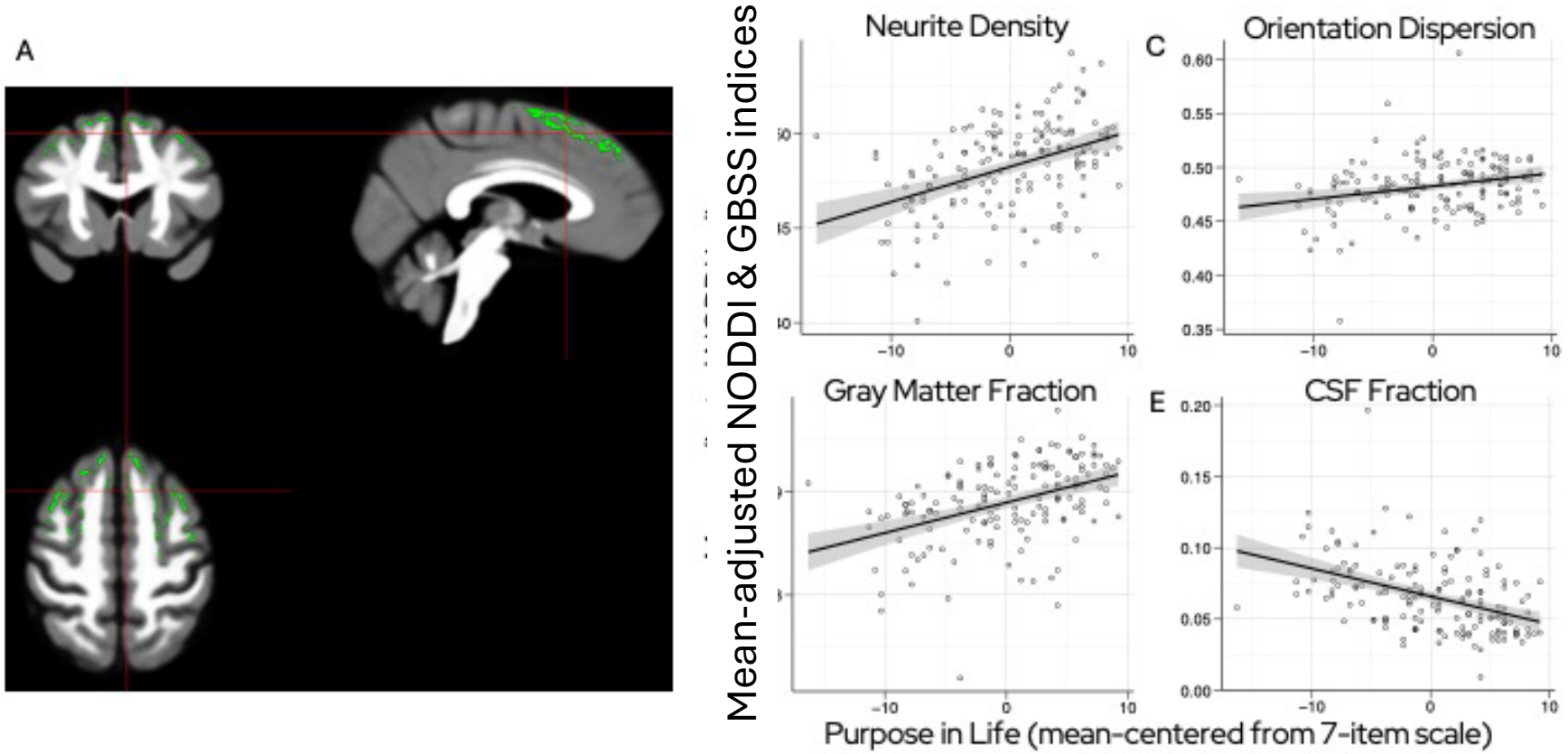
Work led by
Dr. Ajay Nair



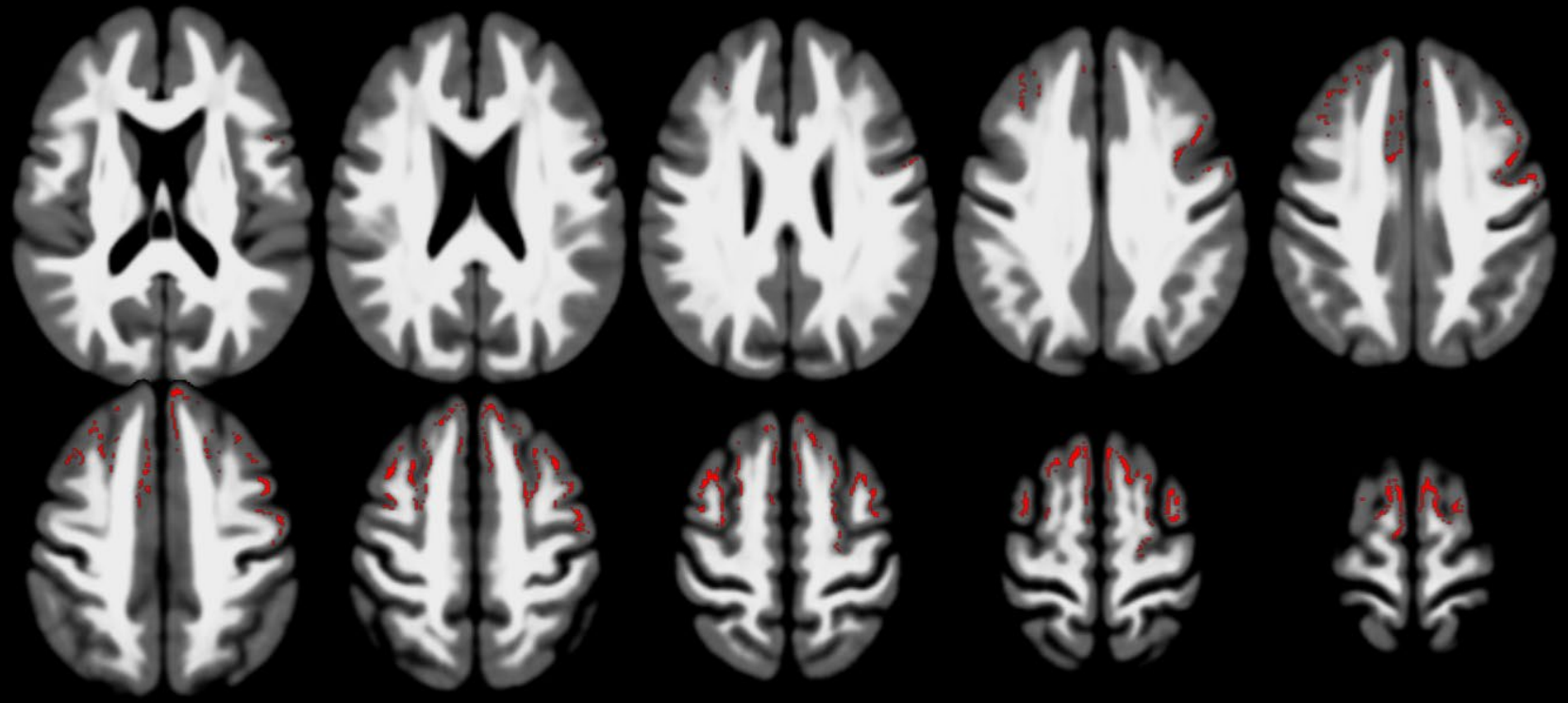
Nair, et al. Front Psychiatry. 2024 Mar 5;15:1355998.

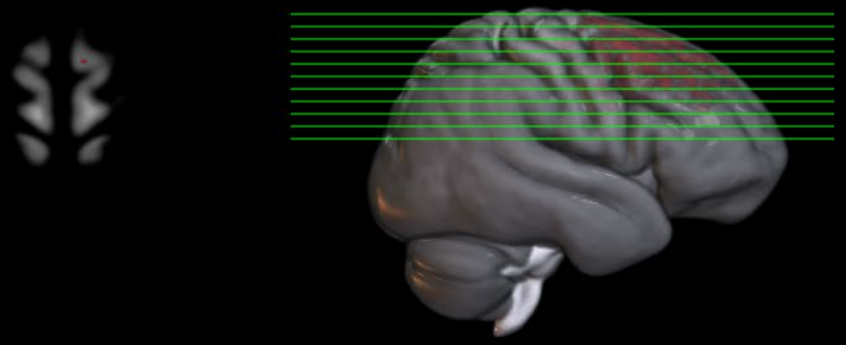
Feeling more purpose is associated with healthier prefrontal cortical microstructure

Work led by
Dr. Nagesh Adluru

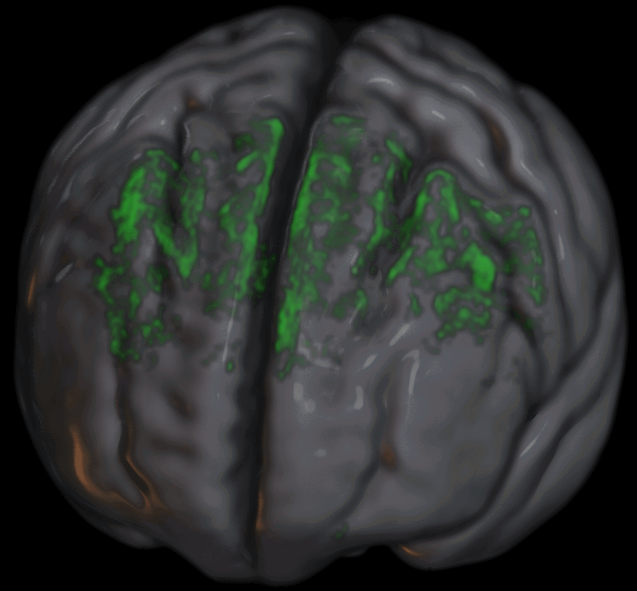


Schaefer & Nair, et al. in prep

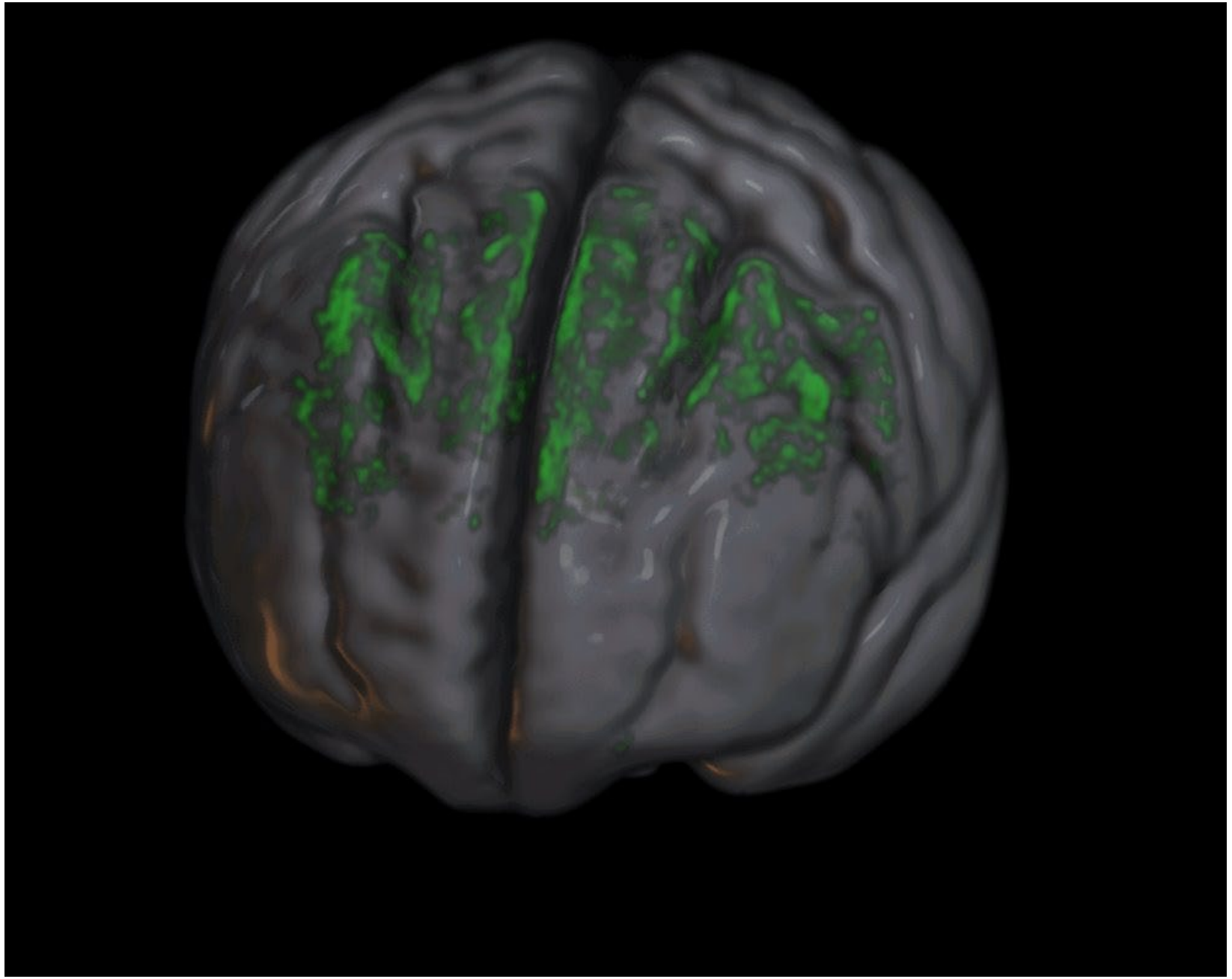




Dorsolateral prefrontal cortex (DLPFC)



Purpose (main effect)
(adjusted for age, sex, race, education)



The dorsolater prefrontal cortex is critical for complex, goal-directed behaviors.

Feeling more purpose in midlife and older adulthood may be reflected by, *and/or supported by*, greater structural integrity of dorsolateral prefrontal cortex.

scientific reports

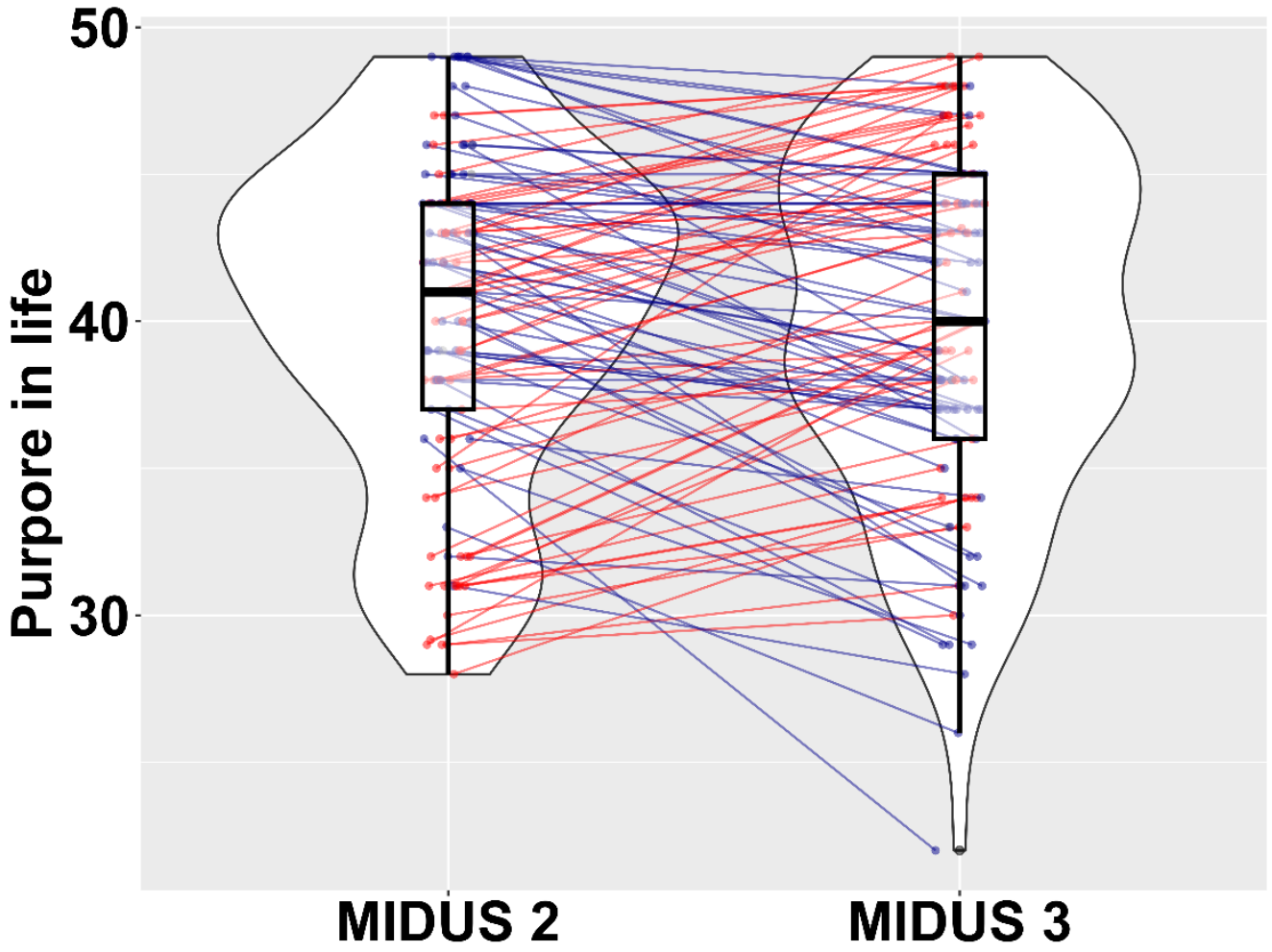
OPEN

Educational disparities in 20-year trajectories of psychological well-being in a national sample

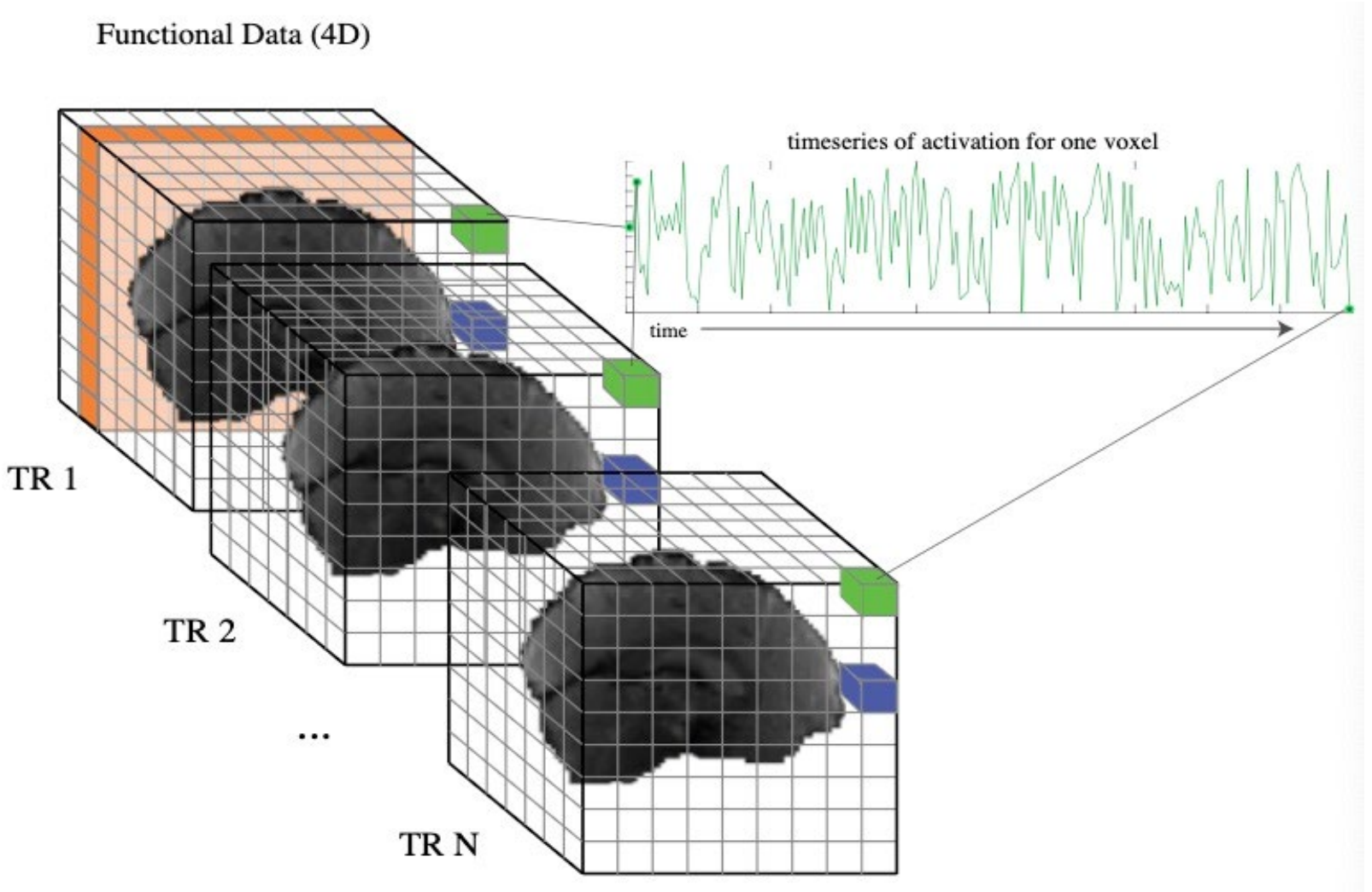
Jennifer Morozink Boylan[1]✉, Jeong Ha Choi[2], Julie A. Kirsch[3] & Carol D. Ryff[3,4]

Long-term trajectories of psychological well-being were investigated using data from a national longitudinal study known as MIDUS (Midlife in the U.S.) The central question was whether educational status and age were associated with gains, losses, or persistent disadvantage on widely studied dimensions of eudaimonic well-being such as personal growth, purpose in life, and self-acceptance. Findings from a sample of adults (N = 6908), aged 25–74 at baseline, showed primarily loss across the 20-year period (1995–2015). Those with a high school education or less showed persistently lower levels of six distinct aspects of well-being compared to those with more education across time. In addition, purpose in life declined for all age groups. Losses over time for autonomy, environmental mastery, and personal growth were steeper for the oldest age group (i.e., 61 years and older) compared to younger (i.e., 40 years and younger) and midlife (i.e., 41–60 years) adults, while losses for self-acceptance were steepest for young adults compared to the two older age groups. The role of structural inequalities in understanding variation in these well-being trajectories and their implications for future health are considered.

Changes in purpose in life over roughly a decade



Task free fMRI measures of functional connectivity

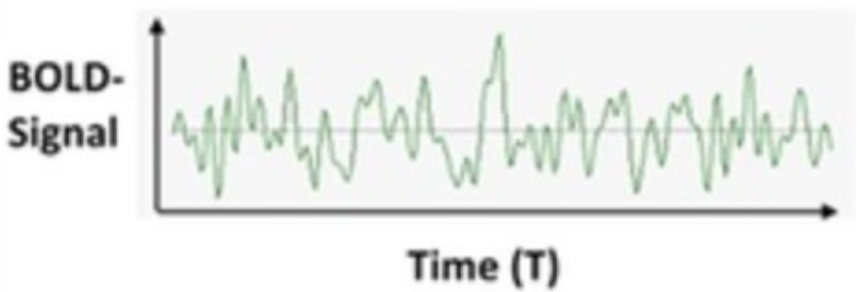


Source: https://cims.nyu.edu/~brenden/courses/labincp/images/brain_basics.svg

fMRI measures of hippocampal functional connectivity

1

ROI Mean



Source: https://doi.org/10.1038/s41398-021-01758-0

fMRI measures of hippocampal functional connectivity

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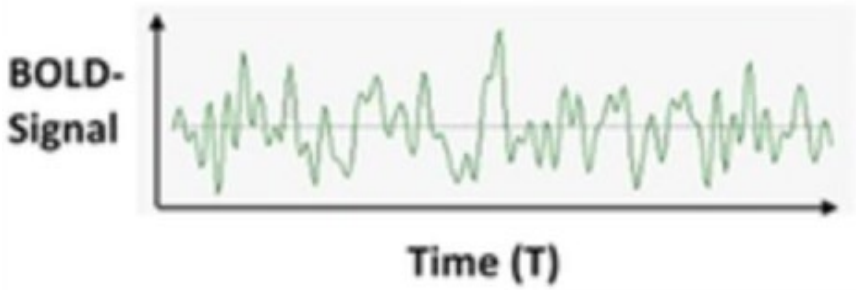
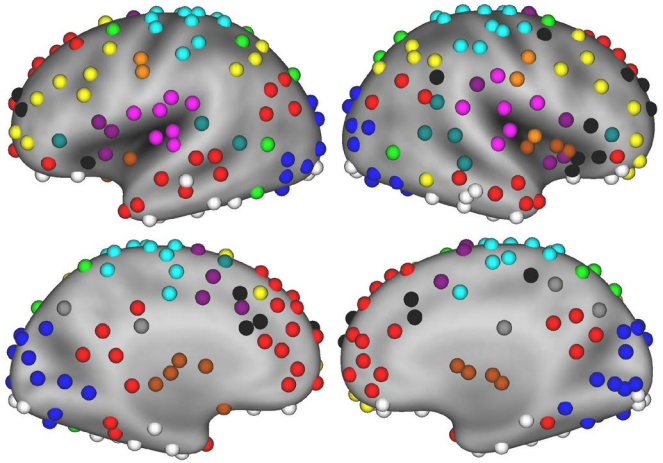
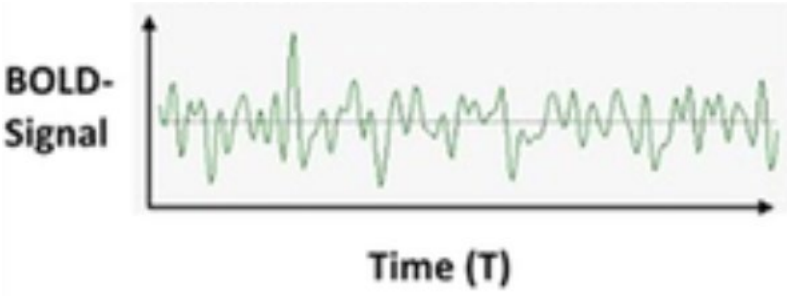
ROI Mean



2. Correlation

Functional connectivity with atlas-based brain region





Source: https://doi.org/10.1038/s41398-021-01758-0

fMRI measures of hippocampal functional connectivity

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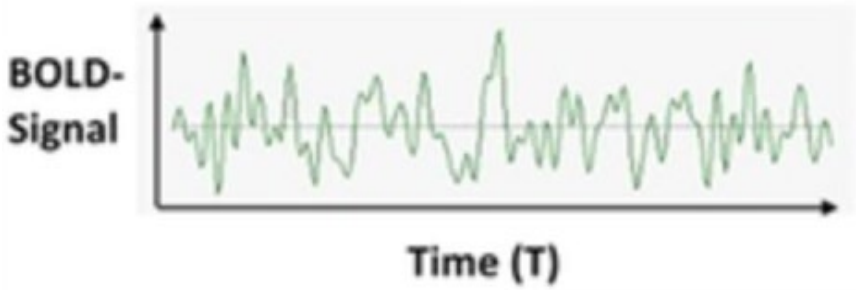

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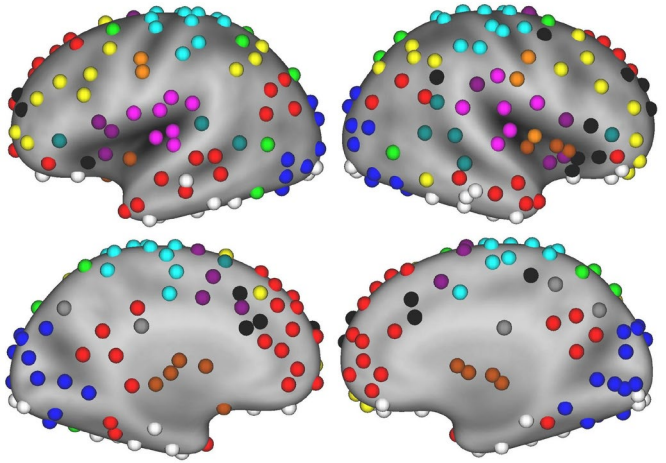
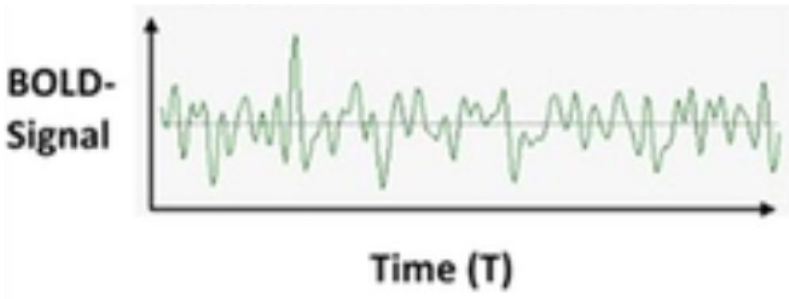
Functional connectivity with atlas-based brain region





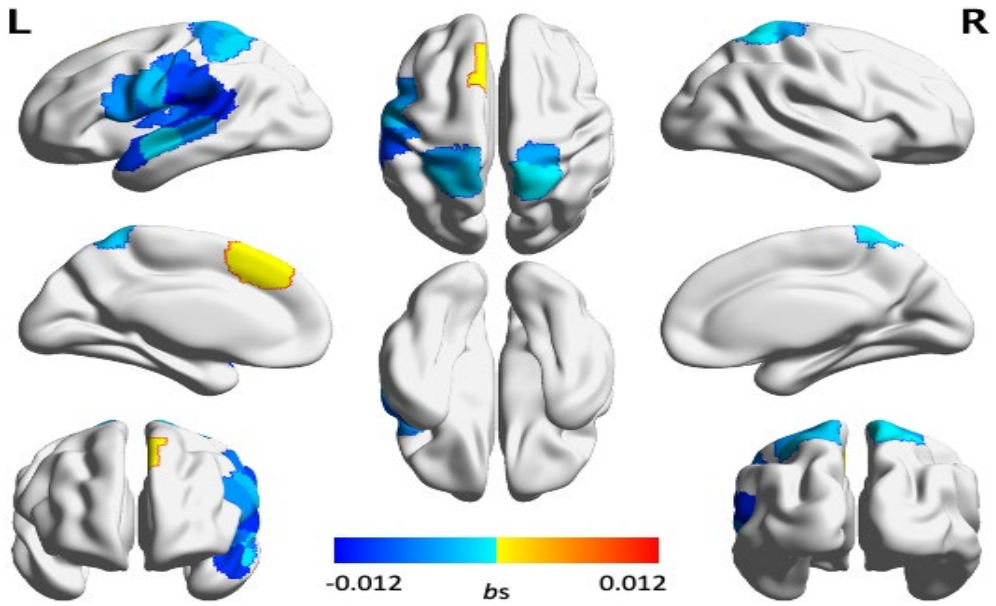
3

Correlations with other measures (age)

Source: https://doi.org/10.1038/s41398-021-01758-0

Hippocampal functional connectivity with age

Work led by
Dr. Yiyi Zhu



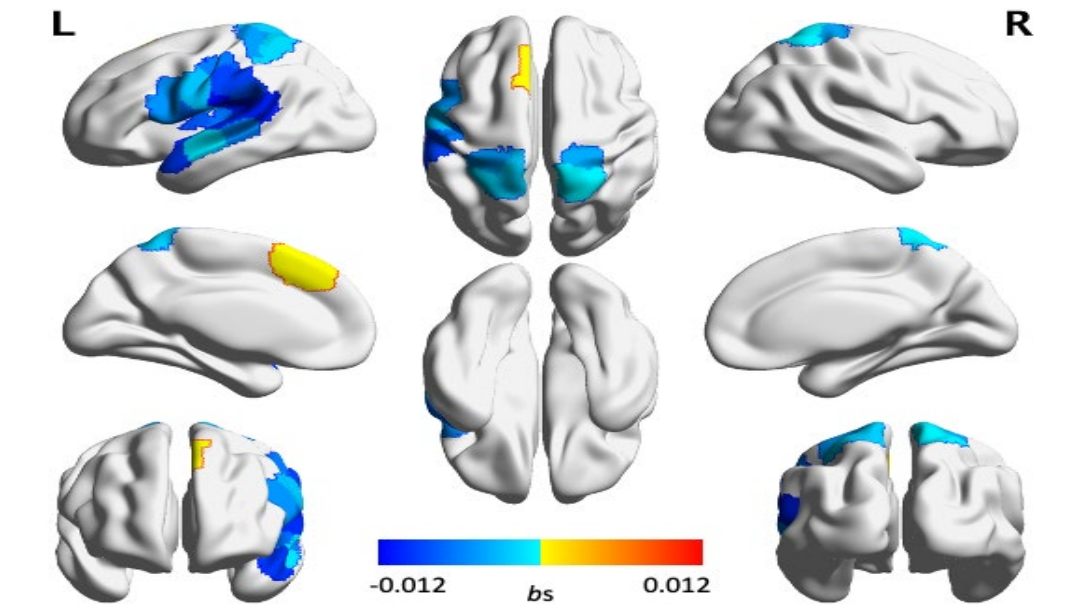
Regions with significant age-related differences in hippocampal functional connectivity

Blue = hippocampal functional connectivity **negatively** associated with age.

Yellow = hippocampal functional connectivity **positively** associated with age

Hippocampal functional connectivity with age

Work led by
Dr. Yiyi Zhu



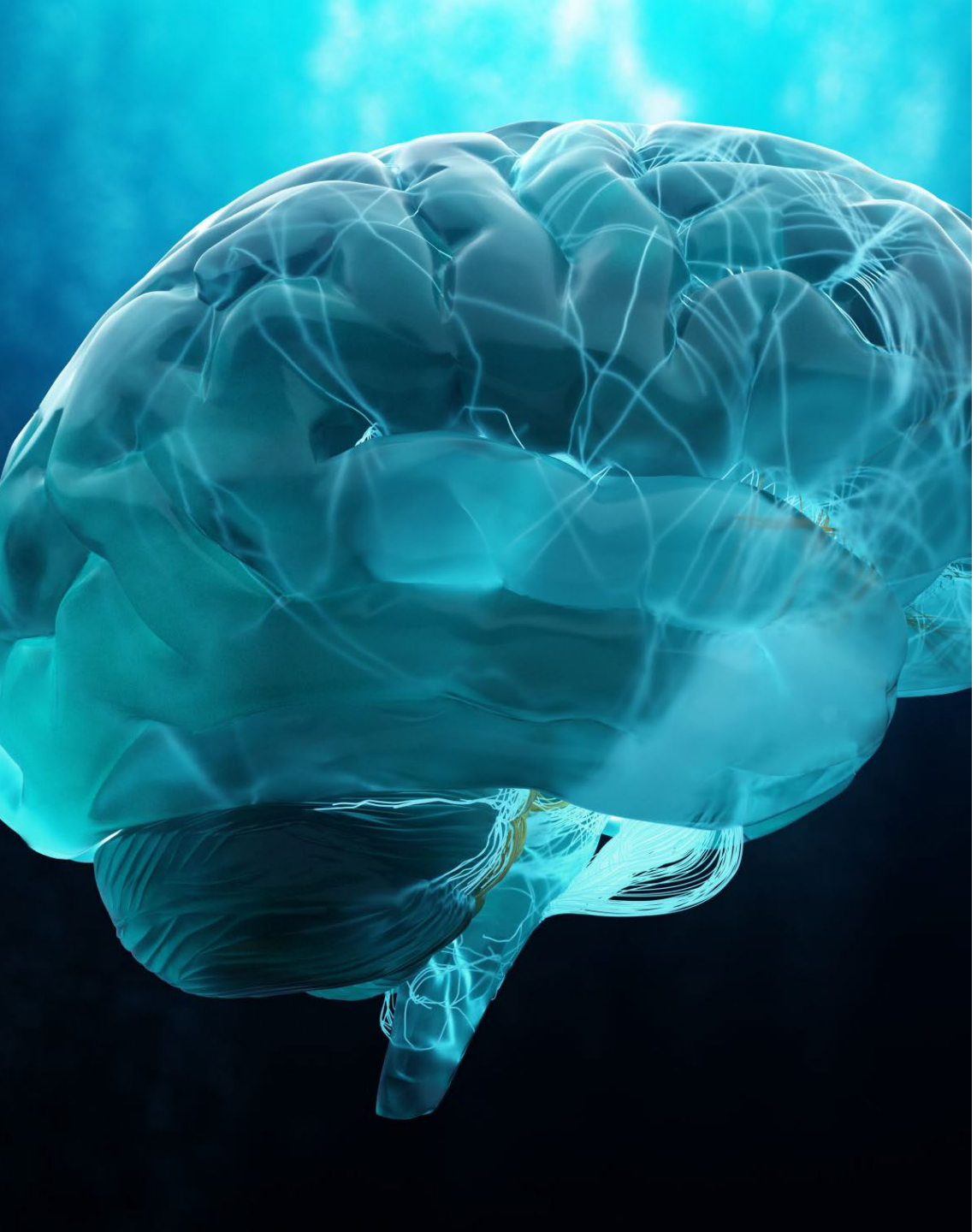
Regions with significant age-related differences in hippocampal functional connectivity

Blue = hippocampal functional connectivity **negatively** associated with age.

Yellow = hippocampal functional connectivity **positively** associated with age

Higher sustained purpose in life over a decade is significantly associated with HIP-FC aging patterns.
Those reporting higher sustained purpose exhibited less of the age-related pattern.

Zhu, et al. under review



In summary, higher levels of purpose are associated with

- Larger hippocampal volumes across adulthood
- Healthier hippocampal, white matter, and dorsolateral prefrontal cortical microstructure
- Better maintained hippocampal resting functional connectivity across the brain (less reflective of typical age differences).

Limitations and Future Directions

Does purpose in life promote healthier brain microstructure or do healthier brains allow for feeling more purpose?

Limitations and Future Directions

Does purpose in life promote healthier brain microstructure or do healthier brains allow for feeling more purpose?

Do the health and lifestyle factors associated with purpose in life mediate the better brain health?

Limitations and Future Directions

Does purpose in life promote healthier brain microstructure or do healthier brains allow for feeling more purpose?

Do the health and lifestyle factors associated with purpose in life mediate the better brain health?

Do children and adolescents exhibit similar relationships between purpose and brain (micro)structure/connectivity?

What impacts purpose?

Life transitions – job burnout, empty nest, retirement, losing a partner,

having a child or grandchild,

being needed, …

Finding purpose

What are your strengths?

Finding purpose

What obstacles have you overcome in your life?

Finding purpose

How has your purpose changed over your life?

Finding purpose

Who are your role models?

Finding purpose

Can you mentor and share your knowledge and skills with others?

Finding purpose

What causes are important to you and how can you help?

Finding purpose

Can you share your story with others?

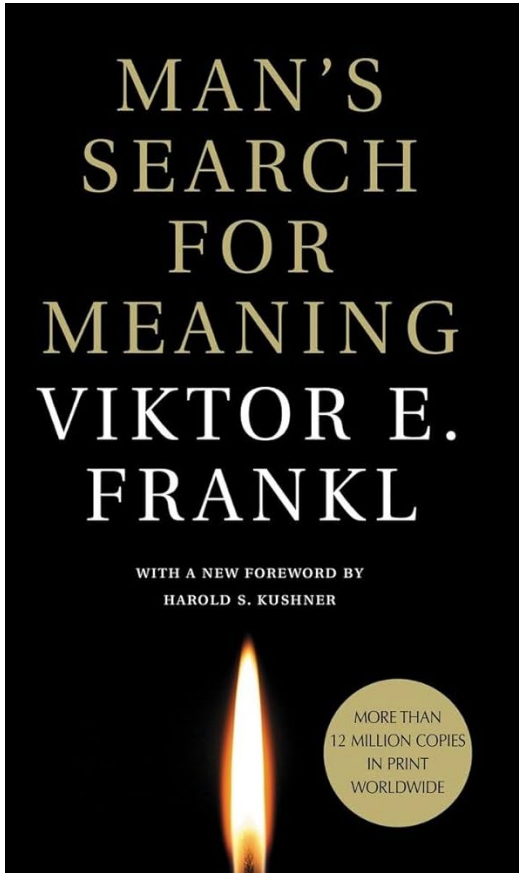
Finding purpose

What can you learn from your own obituary?

Finding purpose

What would you do if you won the lottery?

Questions to help you find purpose



1. What are your strengths?
2. What obstacles have you overcome in your life?
3. How has your purpose changed over your life?
4. Who are your role models?
5. Can you share your knowledge and skills with others?
6. What causes are important to you and how can you help?
7. Can you write and share your story with others?
8. What can you learn from writing your own obituary?
9. What would you do if you won the lottery?
10. Can you be inspired by Viktor Frankl's *Man's Search for Meaning?*

Adapted from Harvard Health https://www.health.harvard.edu/mind-and-mood/10-ways-to-find-purpose-in-life)

What gives you purpose and meaning in life?

And how will you use it to age healthier?

Thank you for purposely listening!

MIDUS data are free and publicly available for download.

Learn more at *www.midus.wisc.edu*

Nagesh Adluru **Lauren Gresham**

Ajay Nair **Sarah Skinner**

Yiyi Zhu **Elizabeth Nord**

Mingtong Liu **Jinx Recchio**

Kareem Al-Khalil **Dan Fitch**

Jeanne Harris **Waisman Brain Imaging**

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Feedback

- Upon zoom exit
- Share your thoughts

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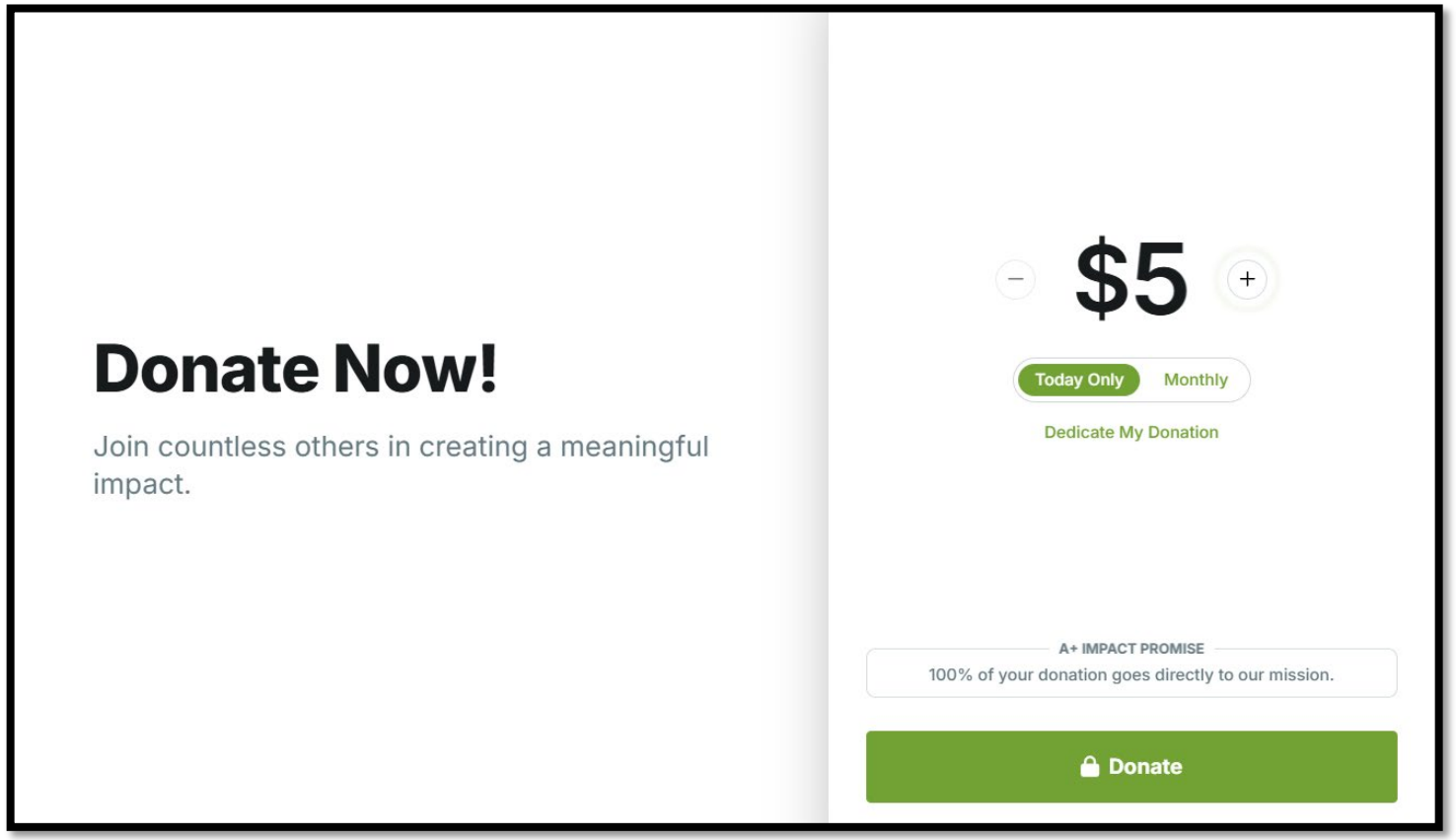

https://wihealthyaging.org/?give=8NDR96EK

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https://wihealthyaging.org/find-a-workshop/

Healthy Living with Chronic Pain Learn skills and strategies to better manage your chronic pain with this 6-week workshop.	See Schedule
Healthy Living with Diabetes Learn skills and strategies to better manage your diabetes in this 6-week program.	See Schedule
Living Well with Chronic Conditions Learn skills and strategies to better manage your health and help you to age well in this 6-week program.	See Schedule
Mind Over Matter: Healthy Bowels, Healthy Bladder Improve or prevent bowel and bladder incontinence in this 3-session program. (For women only)	See Schedule
Physical Activity for Lifelong Success A program designed for those who have not exercised in a while, this 10-week program will help you get started with being active!	See Schedule
Pisando Fuerte Aprende como prevenir caídas con este programa de prevención de caídas multifactorial de 8 semanas.	See Schedule
Powerful Tools for Caregivers Receive support and learn how to care for yourself as you provide care to another. To find a workshop, visit: https://www.powerfultoolsforcaregivers.org/class-type/wisconsin/	See Schedule
Stand Up for Your Health Sitting too much can be bad for your health. Learn how to sit less and stand more with this 4-week program.	See Schedule
Stepping On Learn how to prevent falls with this 7-week multi-factorial fall prevention program.	See Schedule
Tomando Control de Su Salud Learn skills and strategies to better manage your health and help you to age well in this 6-week program.	See Schedule
Vivir Saludable con Diabetes Learn skills and strategies to better manage your diabetes in this 6-week program.	See Schedule
Walk with Ease This 6-week walking program helps you to become more active, reduce pain from arthritis, and live better.	See Schedule

Next for Age Well Series

Next for Age Well Series

Age Well Series

Hearing Health: What Everyone Should Know About Hearing, Hearing Aids, & Healthy Aging

Hearing loss affects millions of people and goes beyond just making it hard to hear conversations. Join audiologist Juliëtte Sterkens and Wynne Whyman, who has had hearing loss since childhood, for a practical session on why you should pay attention to your hearing. Whether you are experiencing hearing changes yourself, are a long-time hearing aid user, or want to support a family member or friend, this session will make you a better-informed consumer. Learn why a hearing care provider who follows Best Practices can matter more than hearing aid technology, strategies for improving communication at home or on the go, options for situations when hearing aids are of little help, and how assistive listening technologies can help you hear great in large venues. Practical handouts and resources will be provided.

Presenters:
Juliëtte Sterkens, AuD
Wynne Whyman, MA, MSS
Center for Hearing Access

August 25
12:00-1:00pm

Register Here

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Q&A