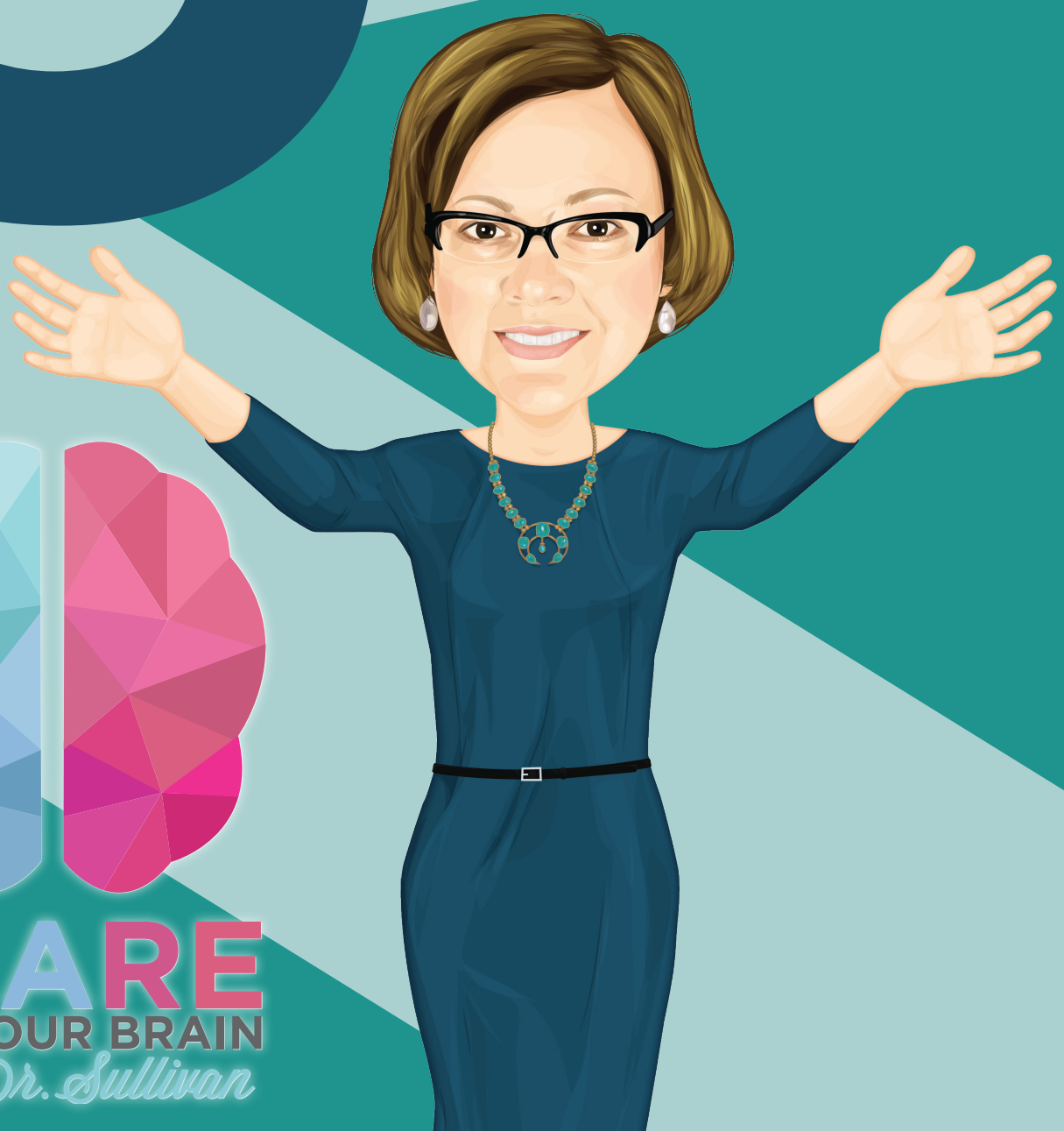
LECTURE 6

The Importance of SOCIAL CONNECTION in Older Adulthood:

It Takes a Village



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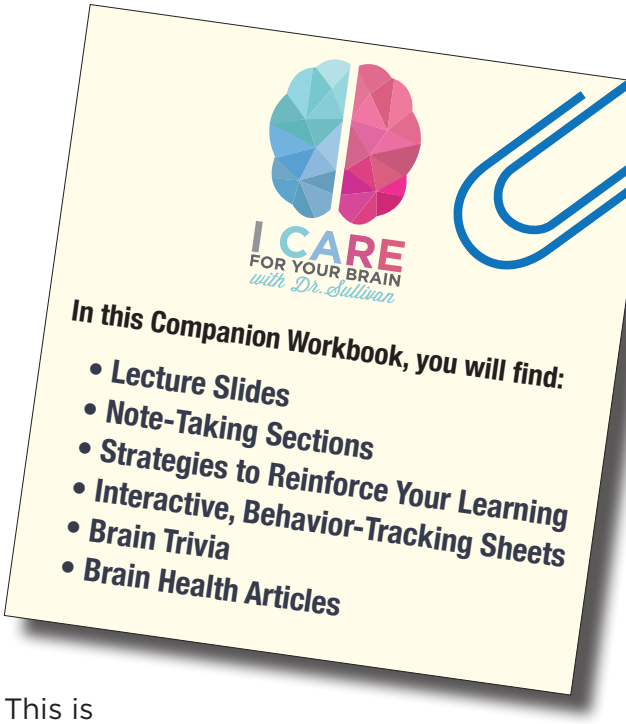
A warm welcome to you!

Hello again, and thank you for joining me! Our topic for Lecture 6 is "The Importance of Social Connection in Older Adulthood." Maintaining a meaningful and satisfying social life, in whatever form works for you, is essential for successful aging and achieving true brain health. Up until now, you may not have fully appreciated the significance of social connection as a potent form of cognitive stimulation, stress relief and even a predictor of our own mortality!



In Lecture 6, we will learn that socialization is fundamental to our quality of life as human beings and affects all aspects of our health: physical, mental and cognitive. We will review a body of research to understand how specific parts of our brains have been designed to manage a large and complex network of relationships. We will take an in-depth look at Dunbar's "social brain hypothesis," which suggests that the size of our social network is directly related to the size of a part of our brain called the orbital prefrontal cortex. This is fascinating stuff!

Once we have established the value of socialization, particularly for brain health, we need to talk about the barriers to remaining social that too often accompany aging. Age-related declines in hearing and vision make a huge impact here. One common example of this is the changes in vision that reduce nighttime driving for so many older adults. This can make social activities after dark no longer an option. We need to talk about how we can reduce age-related obstacles to social connectedness and keep social health a priority throughout the lifespan. In this lecture, we will also review the benefits of community living as one way to achieve this goal.

We conclude, as always, with evidence-based recommendations that will turn your new learning into action! You will be invited to reflect on your "social capital" and identify ways that are unique and meaningful to you to enhance this vital aspect of your health.

Let's begin!

Dr. Karen D. Sullivan

Brain Matters

COMPANION WORKBOOK 6

I CARE FOR YOUR BRAIN with Dr. Sullivan

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was founded on the belief that successful cognitive aging is more than just brain health. It is a multi-dimensional concept that in addition to being brain-based is also rooted in physical health, social and spiritual connectedness, and vital engagement in life.

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The value of remaining physically and mentally active as we age seems to get all the attention; however, maintaining a satisfying social life is just as important to successful aging. As social beings, we have a fundamental need to belong and contribute in meaningful ways with other people.

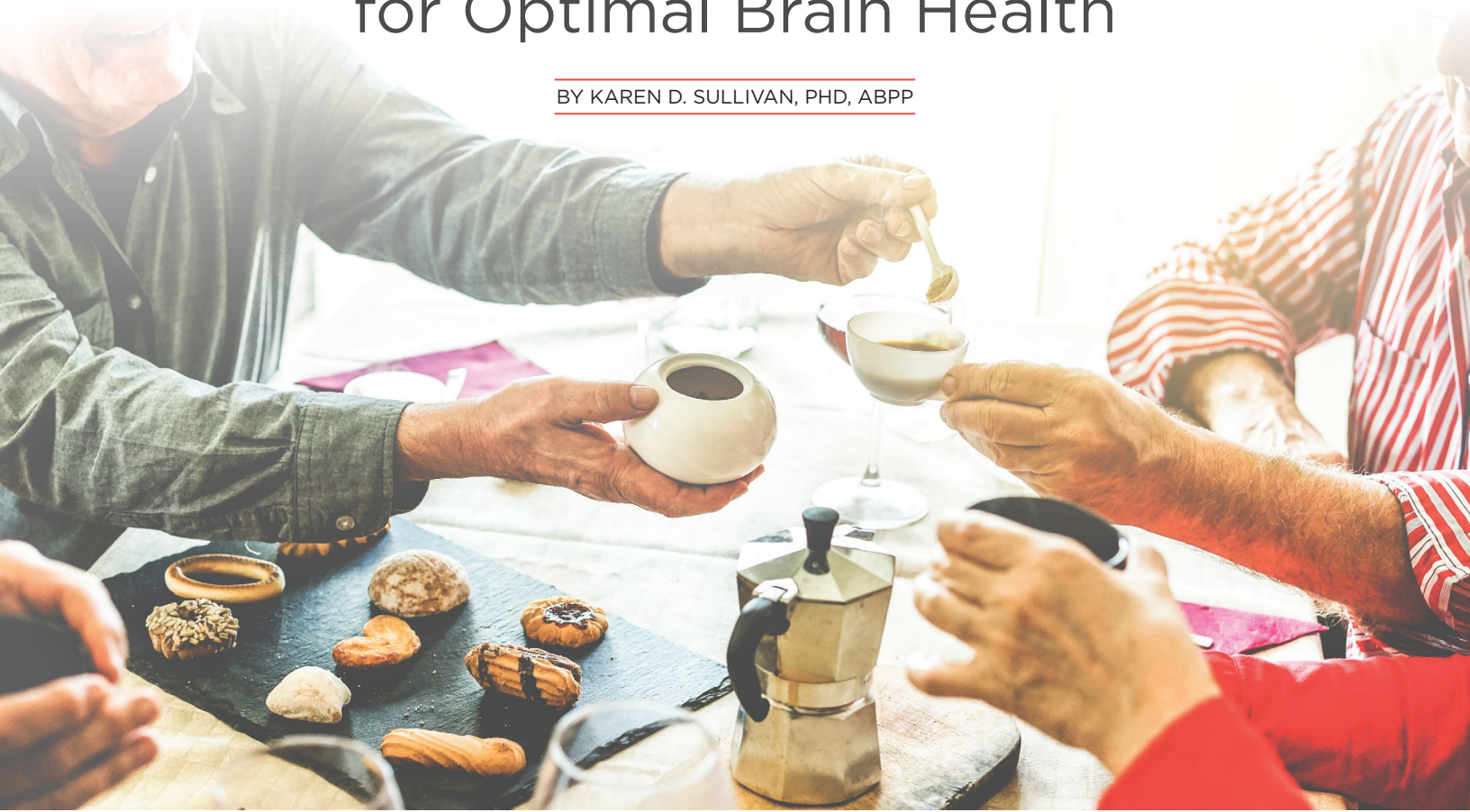
Having a diverse social network with frequent contact as we age is associated with better physical, mental and cognitive health. Some researchers have even suggested that the number of strong social relationships we maintain after retirement has more of an influence on life expectancy than physical exercise, smoking or drinking.

Physically, older adults who report higher social satisfaction have greater immunity to infectious disease, better cardiovascular and pulmonary health, less whole body inflammation and more longevity.

Mentally, older adults who get together regularly with family and friends are 50 percent less likely to report symptoms of depression, as compared to those who have little face-to-face contact. Conversely, older adults who met with family and friends at least three times a week had the lowest level of depression.

Stay Social for Optimal Brain Health

BY KAREN D. SULLIVAN, PHD, ABPP



Cognitively, there are big benefits to staying social. In one study, the rate of cognitive decline was 70 percent slower in older adults with frequent social contact than those with low social activity. In another study, women with larger social networks were 26 percent less likely to develop dementia than those with smaller social networks.

Researchers have reported that the "sweet spot" of socializing is different for everyone, but having three or more personal relationships, in which older adults felt they could rely on for help if needed and confide in about private matters, seems to be the minimum for receiving the brain benefits of socialization.

There are three main ways being social helps our brain:

1 Cognitive engagement: It stimulates brain cells to grow new connections called dendrites, which enhances brain communication, enhances blood flow and limits the amount of time that the aging brain is unfocused (considered to be a risk factor for cognitive impairment).

2 Makes a deposit in our brain bank, our cognitive reserve: People are complicated. We need to be "on our toes" mentally to listen well and respond thoughtfully in conversations. Mental stimulation that is novel and unexpected is the best type of brain exercise.

3 Reduces stress hormones: According to neuroscientists, elevated stress hormones seem to speed the aging of the brain. Laughing and enjoying social time with people is a great stress reliever.

- **Think of social time as you would any other part of a healthy diet.**
- **Value social time as more than just enjoyment, as it makes you healthier in all ways.**
- **Remember, social time contributes to brain health!**

Factors that contribute to our sense of social connectedness include:

- **How long have we known the person?**
- **How often do we see them?**
- **How much do we know about their goals and dreams?**
- **How much do we tell them about private thoughts and feelings?**
- **How familiar is the other person with the rest of our social circle?**
- **Can we trust them to help us?**

The Brain Benefits of Intimacy

BY KAREN D. SULLIVAN, PHD, ABPP

You may remember the days when the word "pregnant" had to be whispered in mixed company, and the extent of public discussion on sex was nil. Times have certainly changed and it has been recognized for many decades now that sexual intimacy is a healthy and normal part of consensual adult relationships. More progressive views on sexuality were accepted with one caveat: they typically excluded adults older than 65 for whom the label of "asexual" was assigned. This stereotype has slowly changed over time with a boost from the World Health Organization in 2010 when it released a statement detailing the importance of sexual health across the lifespan, thereby legitimizing the sexual activity of older adults.

The frequency of sexual activity in older adulthood is similar across adult age groups until around the mid-70s. Research suggests that after this age, the aging process can interfere with the physical ability to engage in intercourse, but intimate behaviors continue and include more hugging, touching and kissing (Herbenick et al, 2010).

There is a growing body of evidence showing that all expressions of sexual intimacy are beneficial to physical and mental health in older adults (Thompson et al, 2011). In recent years, neuroscience research has suggested that maintaining healthy sexual expression in later life may have a previously unrecognized benefit: better cognitive function!

There are three proposed mechanisms of action for how this happens:
1) increased cardiovascular health, as sexual activity is considered mild to moderate physical activity (Levine, Steinke, Bakaeen, et al, 2012); 2) increased release of neurotransmitters and hormones, specifically dopamine and oxytocin (Furth, Mastwal, Wang, Buonanno, & Vullhorst, 2013; Guastella, et al 2010), which decreases stress hormones, improves mood and promotes quality sleep and 3) social engagement, as it provides a complex and stimulating (pun intended) shared experience.

Let's review two recent research studies on the possible connection between sexual activity and cognition in older adults, so you can draw your own conclusions.

—Study 1—

TITLE: Sex on the Brain! Associations Between Sexual Activity and Cognitive Function in Older Age

JOURNAL: Age and Ageing, 2016

AUTHORS: Wright, H. & Jenks, R.A.

PARTICIPANTS: 6,833 adults, aged 50–89

METHOD: Investigated correlations between sexual activity in the previous 12 months (defined as whether or not the research participants had engaged in any form of sexual activity, including intercourse, masturbation, petting or fondling) and the scores from cognitive tests with a focus on immediate and delayed verbal memory and a number sequencing task.

RESULTS: After controlling for age, education, wealth, physical activity, depression, cohabiting, self-rated health, loneliness and quality of life, there were significant associations between sexual activity and number sequencing and memory recall in men and sexual activity and memory recall in women.

CONCLUSIONS: Sexual activity is associated with higher scores on tests of memory and executive function, in adults aged 50–89.

—Study 2—

TITLE: Frequent Sexual Activity Predicts Specific Cognitive Abilities in Older Adults

JOURNAL: The Journals of Gerontology, 2017

AUTHORS: Wright, H. Jenks, R.A. & Demeyere, N.

PARTICIPANTS: 73 adults aged 50–83 years

METHOD: Investigated correlations between frequency of sexual activity in previous 12 months (defined as "never,""monthly" or "weekly" engagement in any form of sexual activity, including intercourse, masturbation, petting or fondling) and the scores from a test of cognitive functioning.

RESULTS: Weekly sexual activity was a significant predictor of overall cognitive function, verbal fluency and visuospatial test performances.

CONCLUSION: Weekly sexual activity was associated with better overall cognition and scores on subtests of verbal fluency and visuospatial ability.

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Are there barriers to remaining intimate with age?

Approximately half of older adult men and women who are sexually active indicate they experience at least one sexual problem (Lindau et al., 2007). Reasons include:

- **Declining sex hormones**
- **Lack of access to a partner**
- **Medical conditions that affect performance or interest**
- **Medication side effects**
- **Negative body image**
- **Internalized stereotypes about aging and sexuality**
- **Lack of privacy**
- **Caregiver role**

"There is no expiration date on expressing your love," says Maggie Syme PhD, MPH, of the Center on Aging at Kansas State University. "Sexuality and intimacy are important to many people across the lifespan.

"It continues to give us physical and emotional benefits into the oldest ages and remains integral to quality of life for many older adults. Clinical psychologists can improve sexual health for older adults by routinely screening for sexual health concerns and providing assessment and intervention as needed, in close collaboration with both the person and their medical team."

REFERENCES

Furth, K. E., Mastwal, S., Wang, K. H., Buonanno, A., & Vullhorst, D. (2013). Dopamine, cognitive function, and gamma oscillations: role of D4 receptors. Front Cell Neuroscience; 7: 119.

Guastella A. J., Einfeld, S. L., Gray, K. M. et al. (2010). Intranasal oxytocin improves emotion recognition for youth with autism spectrum disorders. Biological Psychiatry; 67: 692.

Herbenick, D., Reece, M., Schick, V., Sanders, S. A., Dodge, B., & Fortenberry, J. D. (2010). Sexual behavior in the United States: Results from a national probability sample of men and women ages 14–94. Journal of Sex Medicine;7(suppl 5):255–265.

Levine, G.N., Steinke, E. E., Bakaeen, F. G. et al. (2012). Sexual activity and cardiovascular disease: a scientific statement from the American Heart Association. Circulation, 125:1058–72.

Lindau, S. T., Schumm, P. Laumann, E. O., Levinson, W., O'Muircheartaigh, C. A., & Waite, L. J. (2007). A study of sexuality and health among older adults in the United Stated. New England Journal of Medicine, 357, 762-774.

Thompson, W., Charoa, L., Vahia, I., Depp, C, Allison, M, & Jeste, D. (2011). Association between higher levels of sexual function, activity, and satisfaction and self-rated successful aging in older postmenopausal women. Journal of the American Geriatrics Society, 59, 1503–1508.

Wright H., Jenks R.A. & Demeyere, N. (2017). Frequent Sexual Activity Predicts Specific Cognitive Abilities in Older Adults. The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences. gbx065, https://doi.org/10.1093/geronb/gbx065

Conversation:

A Free Brain Game That Really Works!

BY KAREN D. SULLIVAN, PHD, ABPP

It seems like everyone these days is playing (and paying to play) "brain games" in an attempt to keep their mind strong and healthy. While these games will not harm you in any way, besides the dent they leave in your wallet, their marketing departments frequently overstate their value. There is no "brain game" on the market today that delivers on the promise to prevent or reverse cognitive impairment—not one.

Conversation, in contrast, provides us with a free and accessible alternative that actually has scientific support for impacting brain health, as you've been learning in this lecture. It is important to prioritize all types of conversation, particularly as we age, including casual banter, meaningful one-on-one exchanges and group discussions.

Three Benefits of Conversation

1. **Mental stimulation:** Conversation focuses our attention, uses language skills, long-term memory retrieval, makes short-term memories and elicits emotions.

2. **Stimulates the brain on the cellular level:** Conversation encourages the growth of new dendrites in the brain and enhances blood flow, so we get more oxygen and glucose to our brain.

3. **Improves sleep and mood:** Conversation reduces cortisol, the primary stress hormone, and increases the production of oxytocin, the so-called happy hormone, which is credited with improving our mood and sleep.

Lecture 6

THE IMPORTANCE OF SOCIAL CONNECTION IN OLDER ADULTHOOD: *It Takes a Village*

- Lecture series focused on the brain health of older adults
- Evidence-based information and recommendations
- Supported by science and unbiased clinical expertise
- Motivating you to action!

Slide Presentation Begins

LEARNING TOPICS

- The social animal
- What are the key social skills?
- How socialization impacts all aspects of our health
- The benefits of community living
- I CARE FOR YOUR BRAIN Recommendations

WHY IS THIS TOPIC IMPORTANT

- We have a fundamental need to belong and contribute
- Our connections to and interactions with others are linked to our physical, mental and brain health
- Maintaining meaningful and satisfying social activity is central to successful aging
- Social health makes an undervalued contribution to brain health

NOTES

THE SOCIAL ANIMAL: US

Safety in numbers

Food scarcity

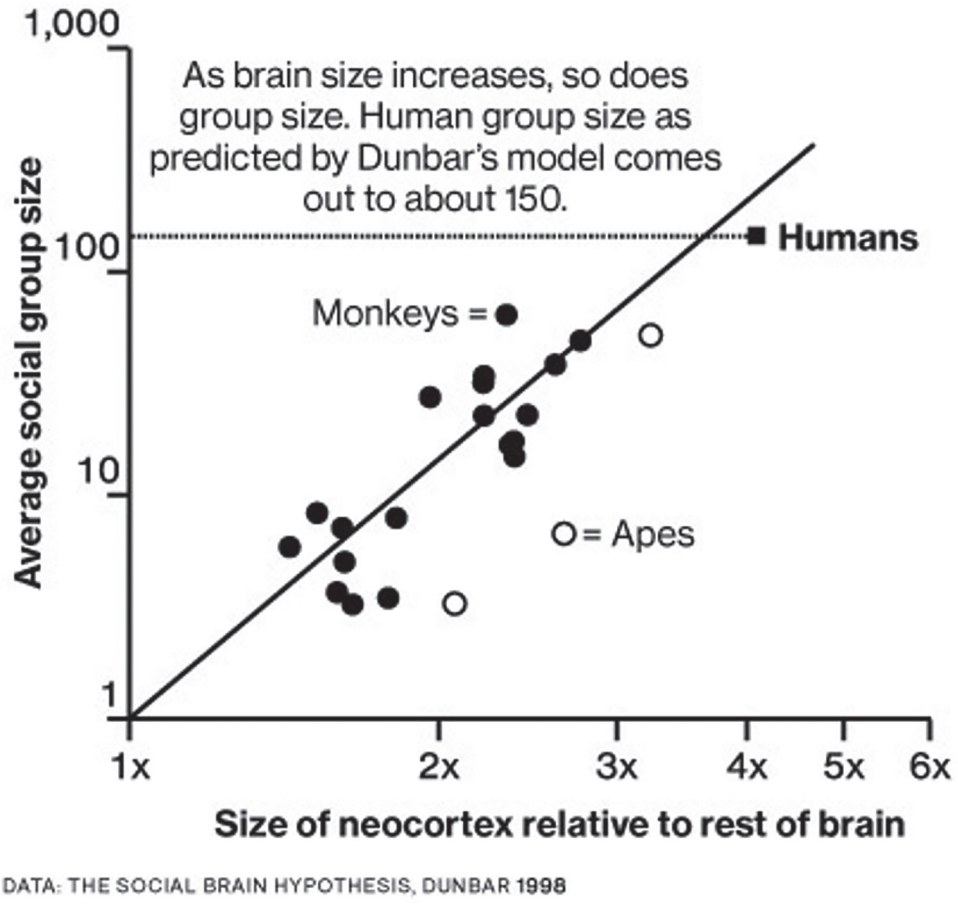
Better problem solvers together

Social learning required efficient communication = language

The ability to share and learn new information and ideas, ranging from where to find food to technical innovations, is the basis of human culture

NOTES

Social Brain Hypothesis (Dunbar, 1993)



DATA: THE SOCIAL BRAIN HYPOTHESIS, DUNBAR 1998

NOTES

We require greater brain power to keep track of who is doing what and with whom

The size of each individual's social network is related to the volume in a frontal region of each individual's brain called the orbital prefrontal cortex (Powell et al, 2010)

Given the size of our brain, we have an expected social group size of around 150 people, the number of people with whom the average person can maintain close personal relationships (Powell et al, 2010)

Brain size helps us to deal with our large and complex network of relationships.

NOTES

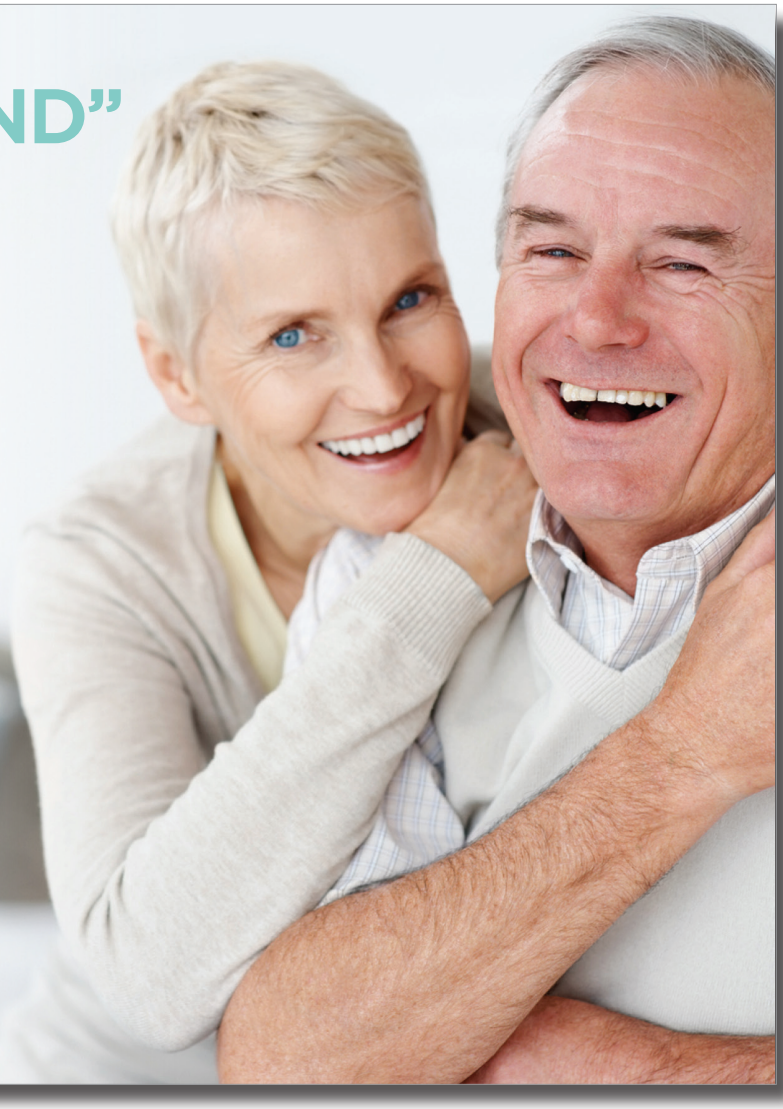
Key Social Skills:

CARES

- Cooperation
- Assertion
- Responsibility
- Empathy
- Self-Control

NOTES

"THEORY OF MIND"



An extension of empathy

"Put yourself in their shoes"

The ability to attribute mental states (beliefs, intents, desires, knowledge, perspectives) to others and to understand that others' mental states are different from our own.

Humans have the most highly developed "theory of mind"

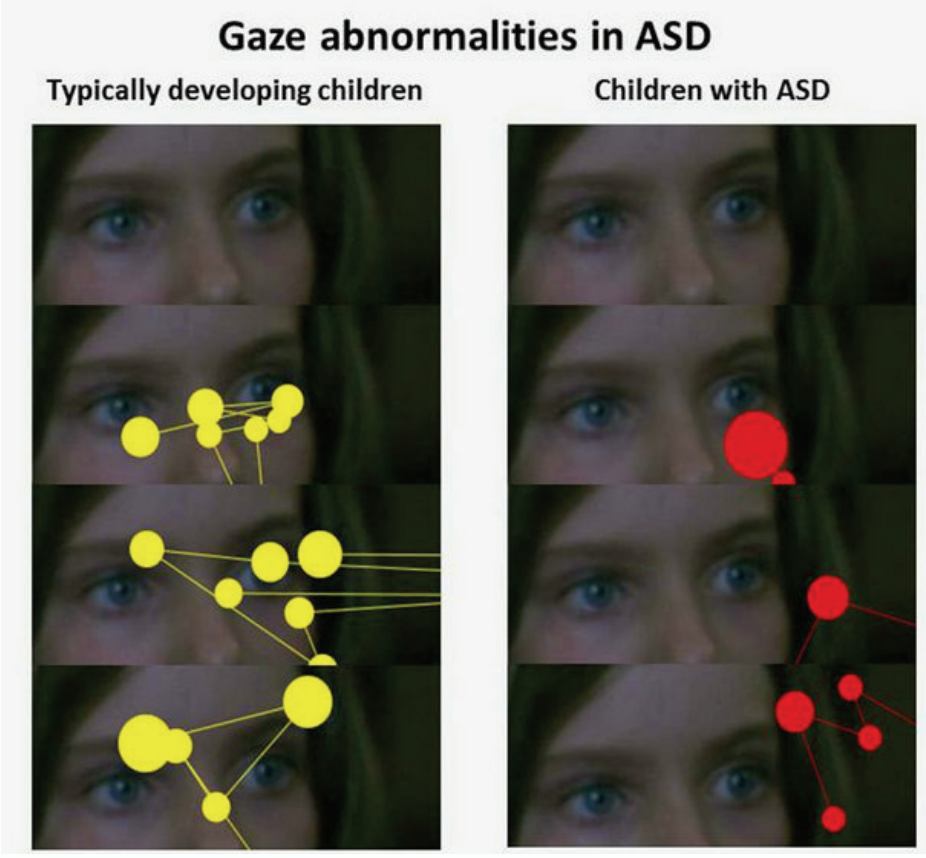
How do we do this?

NOTES

IT'S ALL IN THE EYES (AND MOUTH)

Joyal et al, 2014

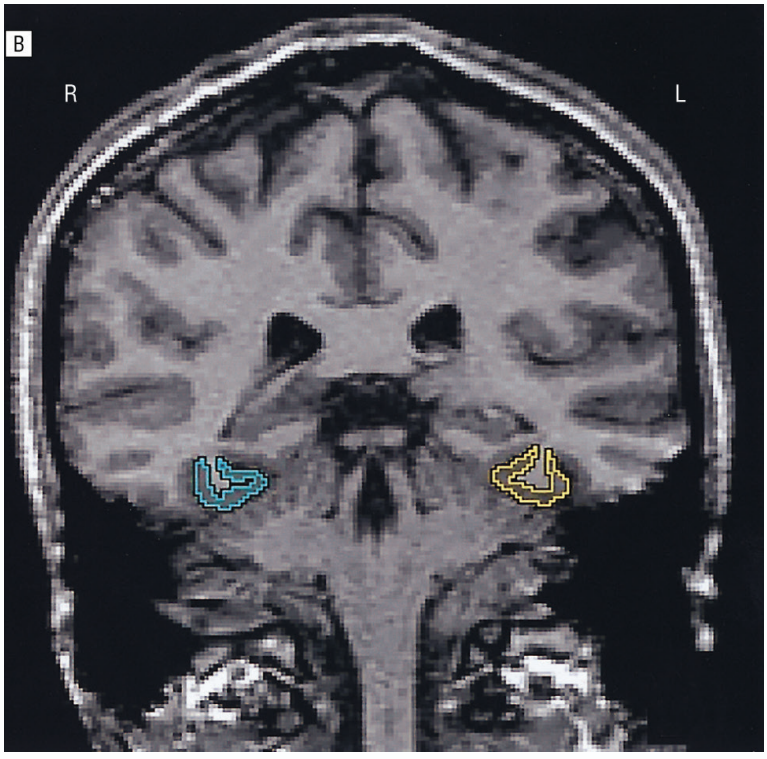
NOTES



(Zilbovicius et al, 2013)

NOTES

FUSIFORM GYRUS



Brain structure specialized for perceiving faces

Stronger activity in this brain area when we see a familiar face

Reduced in schizophrenia (Onitsuka, 2003)

NOTES

WE ALL SUFFER FROM PAREIDOLIA



NOTES

"THE TIMES THEY ARE A CHANGIN'..."

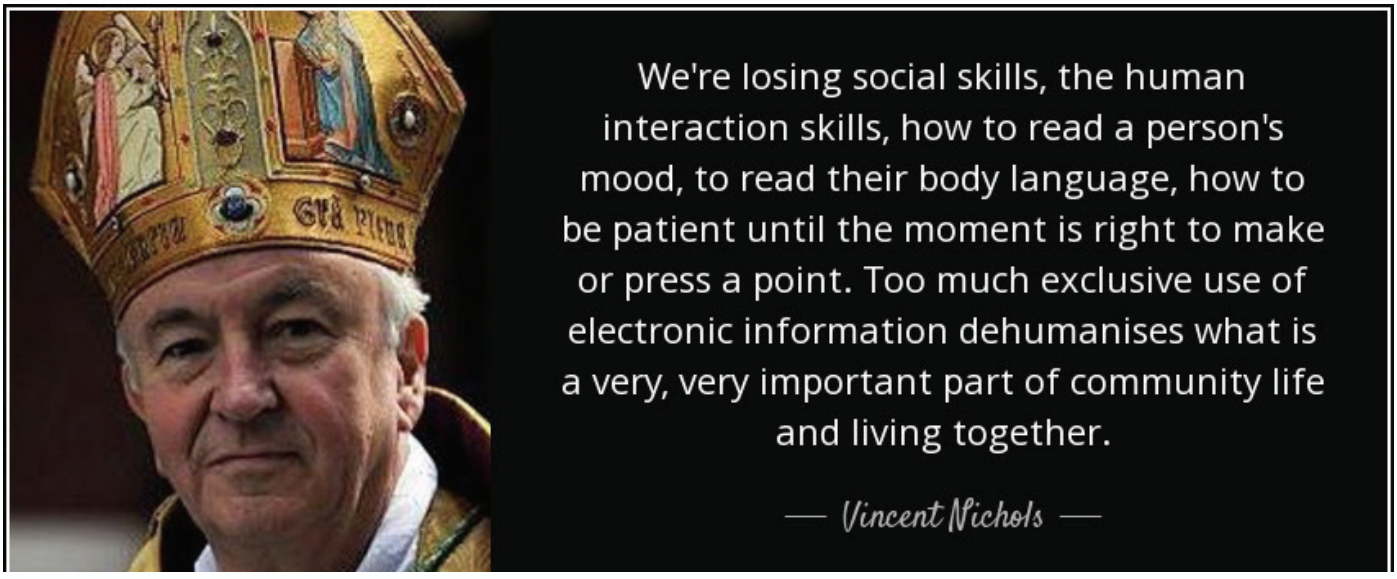
- Global online communication is continuing to rise, making our social world both bigger and smaller

- Our face-to-face social connections are declining:

  - We belong to fewer organizations
  - We attend fewer meetings
  - We attend fewer family dinners
  - We have fewer friends visiting our homes
  - We talk to our neighbors less
  - We have fewer close friends we talk to about our innermost thoughts and feelings

(McPherson, Smith-Lovin, & Brashears, 2006)

NOTES


We're losing social skills, the human interaction skills, how to read a person's mood, to read their body language, how to be patient until the moment is right to make or press a point. Too much exclusive use of electronic information dehumanises what is a very, very important part of community life and living together.
— Vincent Nichols —

NOTES

HOW WE DEFINE GOOD SOCIAL CONNECTEDNESS?

Components that contribute to our sense of social connectedness:

- How long have we known the person?
- How often do we see them?
- Knowledge of the other person's goals
- Physical intimacy or closeness
- Self-disclosure
- How familiar is the other person with the rest of your social circle?
- Can we trust them to help us?

NOTES

Isolation vs. Loneliness

More than 43% of older adults in one study reported that they often feel left out, isolated or lack companionship.

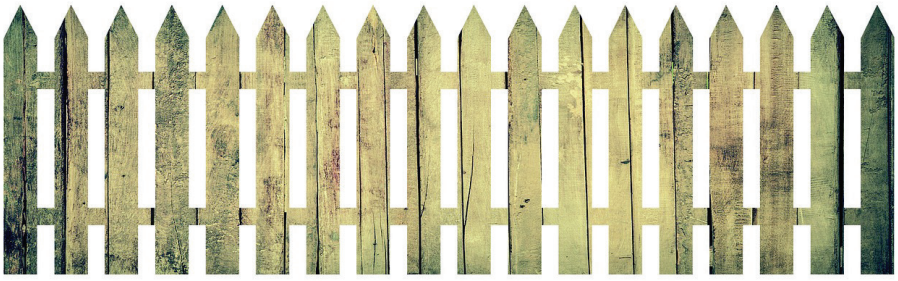
In a six-year follow-up, they had a 45% greater risk of dying earlier than older adults who felt more connected.

63% of these people were married or living with others, an indication that feeling lonely and being alone are not the same (Perissinotto, 2012).

Depends on personality, time of life

NOTES

DOES AGING CREATE BARRIERS TO REMAINING SOCIAL?



Limited mobility and health (hearing loss!)
Friends and loved ones at a distance or moving away
Processing the losses of friends and family
Lack of transportation
Financial constraints
Retirement
Widowhood
Ageism

NOTES

ON THE PLUS SIDE...

On the whole, as we age we let go of non-essential relationships and solve social conflicts more effectively

NOTES


IMPACT ON HEALTH
Physical
Mental
Cognitive

IMPACT ON PHYSICAL HEALTH

Having a more diverse social network with frequent contact is associated with better physical health including:

- Greater immunity to infectious disease (Cohen, Doyle, Skoner, Rabin, & Gwaltney, 1997)
- Better cardiovascular health (Eng, Rimm, Fitzmaurice, & Kawachi, 2002)
- Better pulmonary function (Cheng et al, 2014)
- Less whole body inflammation (Cole et al, 2007)
- Fewer cognitive symptoms (Bassuk et al, 1999)
- Live longer (Udell et al, 2012)
- The influence of social relationships on risk for death is comparable to that of smoking and drinking (Holt-Lunstad et al., 2010)

NOTES

WE ARE OUR SOCIAL NETWORK

Our health behaviors mirror the behaviors of those closest to us.

Married couples often have the same health behaviors, such as diet, exercise, weight management, smoking (starting and stopping), and drinking alcohol (Franks, Pienta, & Wray, 2002; Franks et al., 2012; Meyler, Stimpson, & Peek, 2007).

NOTES

IMPACT ON MENTAL HEALTH

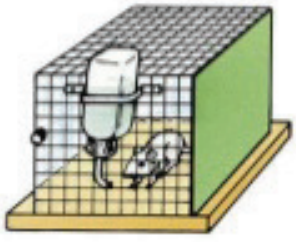
The perceived availability of social support, especially emotional support, buffers the negative effects of stress (Cohen, 2004; Holt-Lunstad et al., 2010).

People who get together regularly with family and friends are 50% less likely to report symptoms of depression as those who have little face-to-face contact.

Older adults who met with family and friends face-to-face at least three times a week had the lowest level of depression (6.5 %). Participants who met up just once every few months had an 12% higher chance of depression compared with those who had even less frequent social contact.

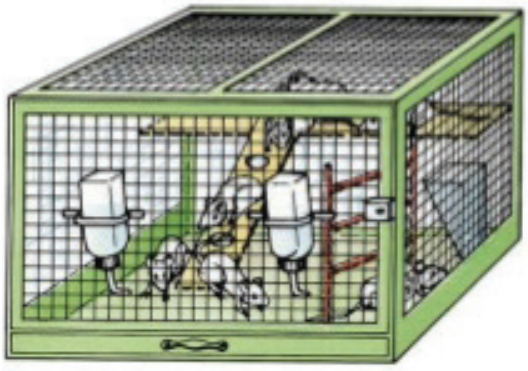
NOTES

IMPACT ON BRAIN HEALTH



Impoverished Environment

Impoverished Rat Brain Cell



Enriched Environment

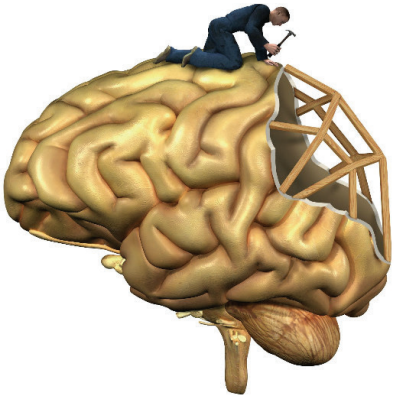
Enriched Rat Brain Cell

NOTES

Think of a typical exchange between two people

Participants were assigned to one of three groups: a social group that participated in a group discussion, an intellectual activities group that solved puzzles, and a control group that watched a television clip.

After these activities, participants were tested on a mental test, and those who spent their time socializing scored highest (Ybarra et al, 2008).



The rate of cognitive decline was 70% less in people with frequent social contact than those with low social activity (James et al, 2011).

Women with the larger social networks were 26% less likely to develop dementia than those with smaller social networks (Crooks et al, 2008).

NOTES

HOW?

Cognitive engagement: Stimulates brain cells to grow branches, enhances blood flow in the brain, limits the amount of time that the aging brain is unfocused

Increases cognitive reserve: People are complicated!

Reduced stress hormones: Elevated stress hormones seem to speed aging of the brain.

NOTES

The Benefits of COMMUNITY LIVING

WHERE WE LIVE MATTERS

The prevalence of isolation among "community dwelling older adults" who live at home rather than senior living communities, may be as high as 43%.

Research suggests that older adults are better able to establish new relationships when they are surrounded by people their own age (Rosow, 1967).

NOTES

SOCIAL OPPORTUNITIES within reach

- Life enrichment programs
- Planned social activities
- Opportunities for volunteering
- Peer support
- Group fitness
- Group meals
- Spiritual services onsite

NOTES

I CARE FOR YOUR BRAIN

with Dr. Sullivan

Recommendations

IS QUALITY SOCIAL TIME ON YOUR MENU?

- Think of it as you would any other part of your healthy diet
- Value social time as more than just enjoyment
- Remember it contributes to brain health!
- Remember the principles of brain plasticity (i.e. the process of brain cells becoming stronger):

Novelty, complexity and repetition

NOTES

REFLECT ON YOUR SOCIAL CAPITAL

How interwoven is your community, how much do you participate in shared activities, how much do you trust and interact with others?

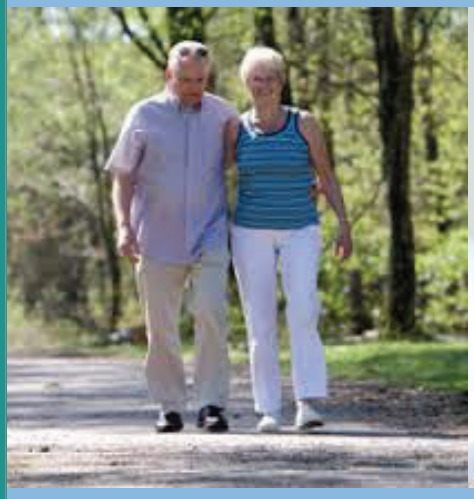
Is this consistent with your wants and interests?

NOTES

FIND YOUR VILLAGE

NOTES

MOVE, SEE AND HEAR YOUR WAY INTO A BETTER SOCIAL LIFE



NOTES

BE FLEXIBLE

in how you think
about your hobbies

NOTES

PRIORITIZE FACE-TO-FACE CONTACT

NOTES

EAT YOUR MEALS WITH OTHERS

NOTES

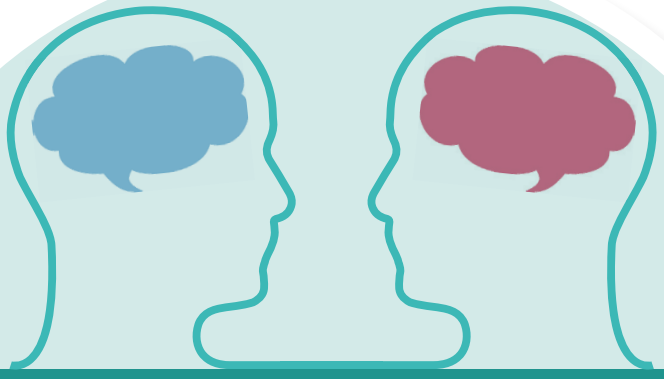
REACH OUT TO A CAREGIVER

- Caregiving increases risk of social isolation dramatically
- 74% of family caregivers caring for a loved one with dementia said they and their loved ones had become more isolated as a result of the disease
- A simple question can go a long way ("How are you really doing?")
- Be consistent
- Live up to your promises of support

NOTES

DON'T FORGET ABOUT RECIPROCITY

NOTES



SMALL GROUP DISCUSSION TOPICS

1. Do you think aging creates barriers to staying socially connected?

2. Dr. Sullivan talked about how online communication is making our social world both bigger and smaller. Do you agree?

3. Discuss the differences between social isolation and loneliness.

4. What was the most interesting thing you learned about how social health impacts brain health?

5. Are you inspired to be more social? How will you do this in a way that works for you?

NOTES

- **ASSERTION:** an ability to make your needs known
- **COOPERATION:** an ability to work in partnership with others, being helpful by doing what is wanted or asked for
- **EMPATHY:** the action of understanding, being aware of, being sensitive to and vicariously experiencing the feelings, thoughts and experiences of another

RESPONSIBILITY: to be morally, legally or emotionally accountable for your actions

- **SELF-CONTROL:** to excercise restraint over one's own impulses, emotions or desires

	0	1	2	3	4	5	6	7	8	9	10
ASSERTION											
COOPERATION											
EMPATHY											
RESPONSIBILITY											
SELF-CONTROL											

PRIORITIZE face-to-face CONTACT

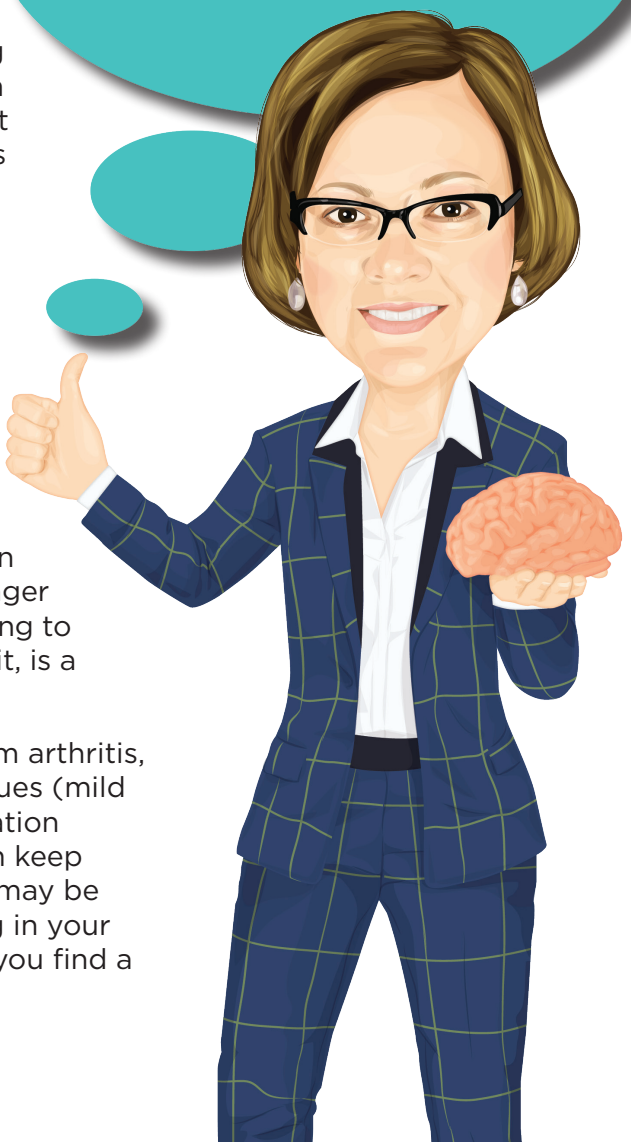
For one week, track your face-to-face activities, which might be eating a meal together, walking with a friend or a game of cards. Make an effort to add more interactions into each day!

Day 1		
Day 2	Day 3	Day 4
Day 5	Day 6	Day 7

The BRAINPOWER Behind HOBBIES

Hobbies are some of the most social activities we do. Even hobbies that seem solitary at first glance have elements that encourage social connection. Model building and reading provide us with great examples. Even though the completion of the model may be done alone in a workroom, the person typically goes to the store to make a purchase and discusses the interest with others who share the pastime. Even though we enjoy reading alone, remember how good it feels when you talk about a treasured book with someone else who enjoyed it too? In essence, our hobbies help connect us to our joy and each other.

Find a way to make your hobbies more social for an extra brain boost!



The brain-benefits of hobbies are not merely social. There is strong scientific support for the power of hobbies to also boost brainpower on the cellular level! Lifelong learning, defined as a commitment to mastering skills and deepening interests over time, has been shown to increase the number of connections between different parts of the brain and encourage the growth of new cells in our memory centers.

Think back to Lecture 1 and the important concept of "Cognitive Reserve" (Stern, 1988), the compelling research findings that suggest the clinical diagnosis of dementia is not perfectly aligned to levels of underlying brain disease. A stronger and more connected brain can better withstand the effects of age-related brain diseases, like Alzheimer's disease, before it starts to manifest symptoms, such as short-term memory loss. One of the best ways to contribute to your cognitive reserve is to remain an active participant in your hobbies. The longer you've had the hobby, the stronger the brain networks are that support it. This is why returning to a previous hobby, even if it has been years since you did it, is a powerful brain enhancer.

Age-related changes in physical health (chronic pain from arthritis, vision or hearing loss, the effects of a stroke), mental issues (mild cognitive impairment, grief) or even our geographic location (moving away from familiar people or organizations) can keep us from fully engaging in our hobbies as we once did. It may be tempting to let these limitations stop you from engaging in your hobbies altogether, but it is critical for brain health that you find a new way to remain connected!

Remaining active in your hobbies despite changes in your ability will require you to think flexibly and change the way you do things.

Use these suggestions as inspiration to keep yourself engaged with what brings you joy and stimulates your brain!

HOBBY AS USUAL	SLIGHTLY MODIFIED	SIGNIFICANTLY MODIFIED
18-hole golf, walking	9-hole golf, with cart	Putting inside, talking about golf with others, watching golf on TV, holding a golf ball
Reading a complex novel	Reading a less complicated book, in large print	Having someone read to you, listening to audiobooks
Playing songs on the piano	Sitting at the piano or a keyboard and playing the keys	Listen to familiar piano songs
Crossword puzzles, expert level	Easier crossword puzzles, word searches	Large print, easy word searches
Playing complicated card games, like bridge	Moderately difficult games, like hearts	Easy games like Go-Fish with grandkids
Gardening	Use raised beds and containers rather than having to reach down into the ground	Ask a friend or family member to plant low-maintenance, high-yield plants that you can enjoy

Reflect on your favorite hobbies throughout your life...

AGE	HOBBIES, LEISURE ACTIVITIES, INTERESTS
0-15	
15-30	
30-45	
45-60	
60-75	
75-80	
80 plus	

GOOD:
Start a new cognitively challenging hobby!

BETTER:
Continue or return to a long-standing hobby!

BEST:
Increase your mastery or the difficultly level of a long-standing or current hobby!

CONVERSATION STARTERS

Where did you grow up?

Tell me about your most interesting vacation...

Conversation is beneficial to your brain health, so why not use it to your advantage?

Find a Common History

Conversation flows more easily when we have shared life experiences. Work to find topics of interest to you and a friend, and compare notes.

Be a Good Listener, Not Just a Good Talker!

Remember, when it comes to connecting with others in a meaningful way, it's not just about what we bring to the table. Work on being a good listener by maintaining eye contact, being attentive and not just waiting for your turn to talk, and asking for clarification if you didn't hear or understand something.

How You Ask the Question Matters

"Tell me how you are feeling today" will elicit more conversation than "Are you having a good day?" We want to invite people into a meaningful back-and-forth conversation, not just simply giving us "yes" or "no" responses.

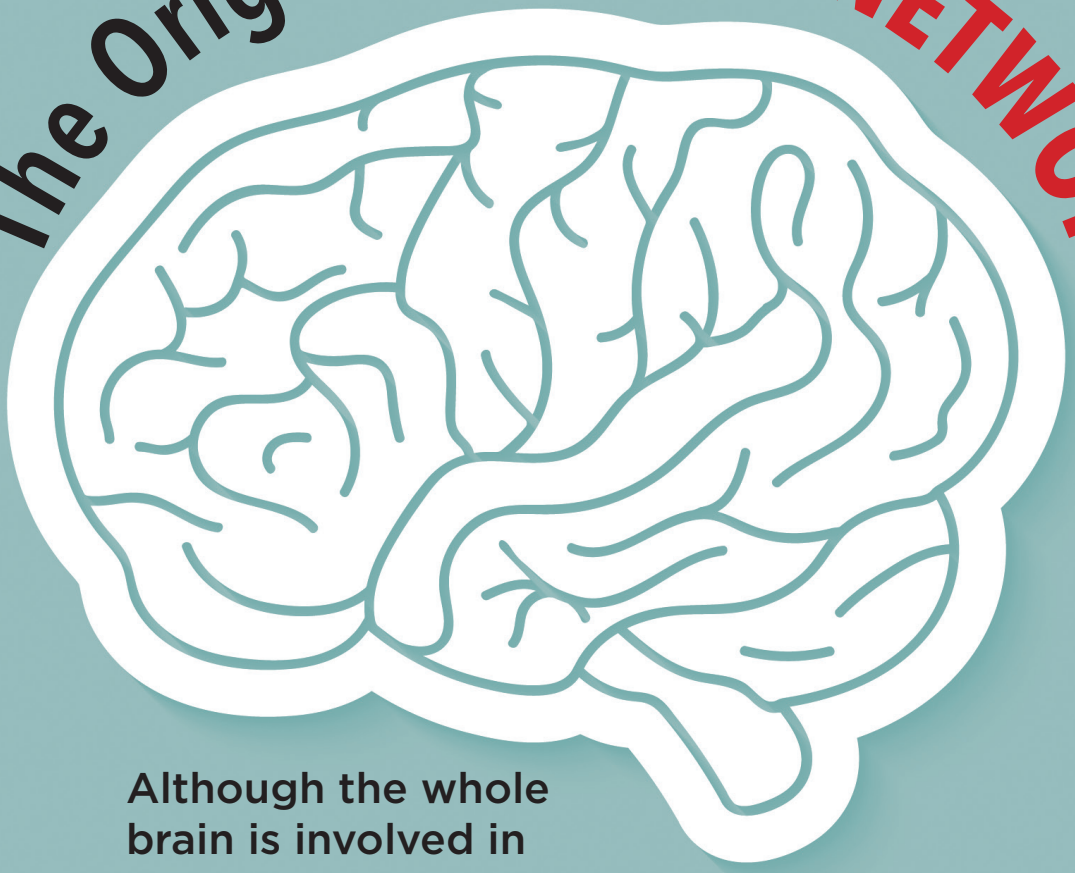
Use this conversation tracker over the next nine days to log:

- How many people did you interact with?
- How many one-on-one conversations did you have?
- How many of them were highly enjoyable or meaningful?
- How many group conversations did you have (more than two people)?

Remember: We track our behavior as the first step in behavior change. Use this tracker to simply notice what you are doing now. Then, use your findings to figure out where you can make improvements.

1	2	3
4	5	6
7	8	9

The Original SOCIAL NETWORK



Although the whole brain is involved in social interaction, there are multiple parts of our brain whose sole or primary jobs are to keep us connected to other people, including:

1 FUSIFORM GYRUS:
Perception of faces

2 NUCLEUS ACCUMBENS:
Helps us to predict what someone will do or say next

3 ORBITOFRONTAL CORTEX:
Helps us "put the brakes on" our impulses and refrain from being inappropriate with others

4 RIGHT SUPERIOR TEMPORAL SULCUS:
Helps us form first impressions of others

5 BROCA'S AREA:
Speech production

6 WERNICKE'S AREA:
Comprehension of language

INTROVERTS

EXTROVERTS

Our need for socialization is strongly related to our personality type. At our most basic level, we are either primarily oriented inward or outward, as introverts or extroverts. Carl Jung taught us that we actually transition through periods of introversion and extroversion throughout our lives with most of us gravitating more inward as we age.

Circle which of these activities most appeals to you as you are today to see where you fall at this time in your life.

INTROVERT	EXTROVERT
I enjoy spending most of my time alone	I enjoy spending most of my time with others
It takes a lot of mental effort for me to be in a crowd	I feel mentally energized in a crowd
I find group conversation draining	I find lively group conversation invigorating
I generally keep to myself in public	I like to strike up conversations with strangers
I am a better listener than talker	I am a better talker than listener

Consider these social activities for the introvert or extrovert to make the most of your social interactions.

INTROVERT	EXTROVERT
Join an interest club that meets in small groups or online	Join an interest club that gathers in larger groups
Volunteer with an organization that serves individuals like delivering meals to homes	Volunteer with an organization that serves in a crowd like at a soup kitchen
Walk with a friend	Walk with a group of friends
Meet up for coffee with 1-2 people	Meet up for lunch with 3-5 people
Pick a book to read alongside a friend or family member	Join a book club
Eat one meal per day with others	Eat at least two meals per day with others

Brain Trivia

COMPANION WORKBOOK 6

1. FILL IN THE BLANKS:
Our connections to and interactions with others are linked to our _____,
_____ and _____ health.

2. FILL IN THE BLANKS:
The ability to share and learn new information and ideas, ranging from where to find food to technical innovations, is the basis of _____ _____.

3. TRUE OR FALSE:

_____ The size of each person's social network is not related to the volume of any brain structures.

_____ Brain size helps us deal with our large and complex network of relationships.

4. FILL IN THE KEY SOCIAL SKILLS FOR EACH LETTER.

C _____
A _____
R _____
E _____
S _____

5. What does the concept "theory of mind" mean?

_____
_____
_____
_____

6. What is the function of the fusiform gyrus (brain structure)?

_____

7. List 4 ways that face-to-face social connections have changed:

_____
_____
_____
_____

8. How have your social connections changed overtime? Do you spend more or less time with loved ones now than you did in the past?

_____

_____

_____

_____

9. List a few of the components that contribute to our sense of social connectedness

_____

_____

_____

FILL IN THE BLANKS USING THE WORDS BELOW:

feeling lonely	**non-essential**	**being alone**
hearing	**43%**	**retirement**

10. In a recent study, more than _____ of older adults reported that they often feel left out, isolated, or lack companionship.

11. Sixty-three percent of these individuals were married or living with others, which is an indication that _____ _____ and _____ _____ are not the same.

12. On the whole, as we age, we let go of _____ relationships and solve social conflicts more effectively.

13. Aging can cause barriers to social interaction. Some of these barriers include _____ loss, limited mobility, _____, and lack of transportation.

14. Dr. Sullivan explained that having a more diverse social network with frequent contact is associated with better physical health. List four ways that social connectedness is linked to your overall health.

_____

_____

_____

_____

TRUE OR FALSE:

15. _____ Our health behaviors are not affected by the behaviors of those closest to us.

16. _____ The perceived availability of social support, especially emotional support, buffers the negative effects of stress.

TRUE OR FALSE:

17. _____ People who visit regularly with family and friends are 50 percent less likely to report symptoms of depression as those who have little face-to-face contact.

18. _____ Data from a 2008 study showed that women with larger social networks were 26% less likely to develop dementia than those with smaller social networks.

19. DRAW LINES TO MATCH THE TERMS WITH THE DESCRIPTION THAT EXPLAINS HOW SOCIAL ENGAGEMENT HELPS BRAIN HEALTH.

Reduced stress hormones	Stimulates brain cells to grow branches and enhances blood flow to the brain
Increases cognitive reserve	Elevated stress hormones speed brain aging
Cognitive engagement	People are complex and complicated

20. FILL IN THE BLANK:
Research suggests that older adults are better able to establish new _____ when they are surrounded by people their own age.

21. List some of the social opportunities that community living can offer for older adults:

_____

_____

_____

_____

22. Describe your current social community? Are you happy with the level of social engagement you have?

_____

_____

_____

_____

23. List a few ways you could improve your social network.

_____

_____

_____

Brain Trivia Answers

"The brain is like a muscle. When it is in use, we feel very good. Understanding is joyous."

—CARL SAGAN

1. Our connections to and interactions with others are linked to our **physical**, **mental** and **brain** health.
2. The ability to share and learn new information and ideas, ranging from where to find food to technical innovations, is the basis of **human culture**.
3. FALSE: The size of each person's social network is not related to the volume of any brain structures.
TRUE: Brain size helps us deal with our large and complex network of relationships.
4. Cooperation
Assertion
Responsibility
Empathy
Self-control
5. The ability to attribute mental states (e.g., beliefs, intents, desires, knowledge, perspectives) to others and to understand that others' mental states are different from our own.
6. The structure of the brain that is specialized for perceiving faces.
7. Any four of the following: belong to fewer organizations, attend less meetings, attend less family dinners, less friends visiting our homes, talk to neighbors less, have fewer close friends
9. Any of the following: length of relationship, how often we see them, knowledge of the other person's goals, physical intimacy or closeness, self-disclosure, how familiar the other person is with the rest of your social circle, trust that they will help during times of need
10. In a recent study, more than **43%** of older adults reported that they often feel left out, isolated, or lack companionship.
11. Sixty-three percent of these individuals were married or living with others, which is an indication that **feeling lonely** and **being alone** are not the same.
12. On the whole, as we age we let go of **non-essential** relationships and solve social conflicts more effectively.
13. Aging can cause barriers to social interaction. Some of these barriers include **hearing** loss, limited mobility, **retirement**, and lack of transportation.
14. Any of the following: greater immunity to infections disease, better cardiovascular health, increased pulmonary function, less whole-body inflammation, less cognitive symptoms, living longer, risk of death
15. FALSE
16. TRUE
17. TRUE
18. TRUE
19. Reduced stress hormones— Elevated stress hormones speed brain aging
Increases cognitive reserve—People are complex and complicated
Cognitive engagement—Stimulates brain cells to grow branches and enhances blood flow to the brain
20. Research suggests that older adults are better able to establish new **relationships** when surrounded by people their own age.
21. Life enrichment programs, planned social activities, opportunities for volunteering, peer support, group fitness, group meals, and on-site spiritual services
23. Any of the following: Address hearing and vision, be flexible in your hobbies, prioritize face-to-face contact, eat meals with others, reach out to a caregiver, etc.

References

- Bassuk, S. S., Glass, T. A., & Berkman, L. F. (1999). Social disengagement and incident cognitive decline in community-dwelling elderly persons. Annals of Internal Medicine, 131(3), 165-173.
- Chen, W., Wang, C., Wu, L., Kao, T., Chan, J., Chen, Y., … Peng, T. (2014). Relationship between lung function and metabolic syndrome. PLOS One, 9(10), e108989.
- Cohen, S. (2004). Social relationships and health. The American Psychologist, 59(8), 676-684.
- Cohen, S., Doyle, W. J., Skoner, D. P., Rabin, B. S., & Gwaltney, J. M. (1997). Social ties and susceptibility to the common cold. JAMA, 277(24), 1940-1944.
- Cole, S. W., Hawkley, L. C., Arevalo, J. M., Sung, C. Y., Rose, R. M., & Cacioppo, J. T. (2007). Social regulation of gene expression in human leukocytes. Genome Biology, 8(9), R189.
- Crooks, V. C., Lubben, J., Petitti, D. B., Little, D., & Chiu, V. (2008). Social network, cognitive function, and dementia incidence among elderly women. American Journal of Public Health, 98(7), 1221-1227.
- Dunbar, R. I. M. (1993). Coevolution of neocortical size, group size and language in humans. Behavioral and Brain Sciences 16 (4): 681-735.
- Eng, P. M., Rimm, E. B., Fitzmaurice, G., & Kawachi, I. (2002). Social ties and change in social ties in relation to subsequent total and cause-specific mortality and coronary heart disease incidence in men. American Journal of Epidemiology, 155(8), 700-709.
- Franks, M. M., Pienta, A. M., & Wray, L. A. (2002). It takes two: Marriage and smoking cessation in the middle years. Journal of Aging and Health, 14(3), 336-354.
- Holt-Lunstad, J., Smith, T. B., & Layton, J. B. (2010). Social relationships and mortality risk: A meta-analytic review. PLOS Medicine, 7(7), e1000316.
- James, B. D., Boyle, P. A., Buchman, A. S., & Bennett, D. A. (2011). Relationship of late-life social activity with incident disability among community-dwelling older adults. The Journals of Gerontology Series A, Biological Sciences and Medical Sciences, 66(4), 467-473.
- James, B. D., Wilson, R. S., Barnes, L. L., & Bennett, D. A. (2011). Late-life social activity and cognitive decline in old age. Journal of The InternationalNeuropsychological Society, 17(6), 998-1005.
- Joyal, C. C., Jacob, L., Cigna, M. H., Guay, J. P., & Renaud, P. (2014). Virtual faces expressing emotions: An initial concomitant and construct validity study. Frontiers in Human Neuroscience, 8, 787.
- McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2006). Social isolation in America: Changes in core discussion networks over two decades. American Sociological Association, 71(3), 353-375.
- Meyler, D., Stimpson, J. P., & Peek, M. K. (2007). Health concordance within couples: A systematic review. Social Science & Medicine, 64(11), 2297-2310.
- Onitsuka, T., Shenton, M. E., Kasai, K., Nestor, P. G., Toner, S. K., Kikinis, R., … McCarley, R. W. (2003). Fusiform gyrus volume reduction and facial recognition in chronic schizophrenia. Archives of General Psychiatry, 60(4), 349-355.
- Perissinotto, C. M., Stijacic, C. I., & Covinsky, K. E. (2012). Loneliness in older persons: A predictor of functional decline and death. Archives of Internal Medicine, 172(14), 1078-1083.
- Powell, J., Lewis, P. A., Roberts, N., García-Fiñana, M., & Dunbar, R. I. (2012). Orbital prefrontal cortex volume predicts social network size: An imaging study of individual differences in humans. Proceedings: Biological Sciences, 279(1736), 2157-2162.
- Roscow, I. (1967). Social integration of the aged. New York, NY: Free Press.
- Udell, M. A., Spencer, J. M., Dorey, N. R., & Wynne, C. D. (2012). Human-socialized wolves follow diverse human gestures...and they may not be alone. International Journal of Comparative Psychology, 25(2), 97-117.
- Ybarra, O., Burnstein, E., Winkielman, P., Keller, M. C., Manis, M., Chan, E., & Rodriguez, J. (2008). Mental exercising through simple socializing: Social interaction promotes general cognitive functioning. Personality and Social Psychology Bulletin, 34(2), 248-259.
- Zilbovicius, M., Saitovitch, A., Popa, T., Rechtman, E., Diamandis, L., Chabane, N., … Boddaert, N. (2013). Autism, social cognition and superior temporal sulcus. Journal of Psychiatry, 3(2), 46-55.

PRIORITIZE
face-to-face
CONTACT

BE FLEXIBLE

IN HOW YOU THINK
ABOUT YOUR HOBBIES

I CARE
FOR YOUR BRAIN
with Dr. Sullivan

Are
social
opportunities
within your
REACH?

EAT Your Meals
with others

FLIP the SWITCH

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   WHAT TO DO ABOUT DIET, MEDICATIONS, ALCOHOL AND SUPPLEMENTS
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   EVIDENCE-BASED METHODS TO IMPROVE MEMORY
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