



references

INTRODUCTION

Section One

"The Young Ones." The Langer Mindfulness Institute, <http://langermindfulnessinstitute.com/the-young-ones/>.

Section Three: A mighty river

Amazon River Quote

"The Living Planet 08 of 12 Sweet Fresh Water." *Dailymotion*, February 23, 2014. https://www.dailymotion.com/video/x1d4wkn_the-living-planet-08-of-12-sweet-fresh-water_tv

Section Four: It's a good time to grow old

Life expectancy, past and future and why are we getting older

Lindenberger U. "The Aging Brain: Human cognitive aging: *Corriger la fortune?*" *Science* 346 (2014): 572-78.

Life expectancy figures

Miller, M. "How to Make Your Money Last as Long as You Do." *New York Times*, Feb 18, 2017. (quoting from Society of Actuaries figures (<https://www.soa.org/member/>))

Evolutionary history of life expectation (after age 30 it's all over)

Hayflick, L. "The Future of Ageing." *Nature* 408 (2000): 267-69.

122nd birthday

Whitney, C. R. "Jeanne Calment, World's Elder, Dies at 122." *New York Times*, 1997.

Section Five: How the brain is wired

Basic Brain Anatomy/cellular physiology

Fadem, B., and E.A. Monaco III. *High-Yield Brain and Behavior*. Philadelphia: Wolters Kluwer, 2008.

Various theories of aging

Tosato, M., *et al.* "The Aging Process and Potential Interventions to Extend Life Expectancy." *Clin Interv Aging* 2, no. 3 (2007): 401-12.

CHAPTER ONE – Your Friendships

Section One

Karl and Elizabeth, 75th wedding anniversary

<https://www.yahoo.com/gma/couple-celebrates-75-years-marriage-tearful-vows-kiss-174021607--abc-news-sex.html>

Section Two: Socializing: vitamins for the brain

New York socialites

Hayt, E. "90 Candles, and a Second Wind." *New York Times*, 2000.

70% decline in global cognition and social interactivity

James, B.D., *et al.* "Late-Life Social Activity and Cognitive Decline in Old Age." *J Int Neuropsychol Soc* 17, no. 6 (2011): 998-1005.

Memory decline and social interactivity

Ertel, K.A., *et al.* "Effects of Social Integration on Preserving Memory Function in a Nationally Representative Us Elderly Population." *Am J Public Health* 98, no. 7 (2008): 1215-20.

Cognitive boost in as little as ten minutes

Ybarra, O., *et al.* "Mental Exercising through Simple Socializing: Social Interaction Promotes General Cognitive Functioning." *Pers Soc Psychol Bull* 34, no. 2 (2008): 248-59.

Video-chat based interventions

Dodge, H.H., *et al.* "Web-Enabled Conversational Interactions as a Means to Improve Cognitive Functions: Results of a 6-Week Randomized Controlled Trial." *Alzheimers Dement* 1, no. 1 (2015): 1-12.

Section Three: More parties, less flu

Allostatic load defined

McEwen, B.S., and E. Stellar. "Stress and the Individual. Mechanisms Leading to Disease." *Arch Intern Med* 153, no. 18 (1993): 2093-101.

Socialization reduces allostatic load

Seeman, T.E., *et al.* "Social Relationships, Gender, and Allostatic Load across Two Age Cohorts." *Psychosom Med* 64 (2002): 395-406.

Aging and immune system competency

Seegerstrom, S.C., and G.E. Miller. "Psychological Stress and the Human Immune System: A Meta-Analytic Study of 30 Years of Inquiry." *Psychological Bulletin* 130, no. 4 (2004): 601-30.

Marriage, stress and wound-healing

Kiecolt-Glaser, J.K., *et al.* "Hostile Marital Interactions, Proinflammatory Cytokine Production, & Wound Healing." *Arch Gen Psychiatry* 62, no. 1377-1384 (2005).

Gary Skole quote

Skole, G. M. "How Important Is the Socialization of the Elderly?" http://www.visitingangels.com/how-important-is-the-socialization-of-the-elderly-weekly-message_16.

Section Four: A workout for your brain

When Harry Met Sally Scene

Nora Ephron, *When Harry Met Sally*, 35mm, directed by Rob Reiner (1989; USA: MGM, 1989.), Film.

Social interactions extremely complex

Hari, R., *et al.* "Centrality of Social Interaction in Human Brain Function." *Neuron* 88, no. 1 (2015): 181-93.

Synaptic plasticity (interactivity produces structural/volumetric changes, general considerations)

Bailey, C.H., et al. "Structural Components of Synaptic Plasticity and Memory Consolidation." *Cold Spring Harbor Pers Biol* 7 (2015): a021758.

Chelsea Wald quote

Wald, C. "Better together." *Nature* 531 (2016): S14 – S15

Definition and neural substrates of mentalizing (Theory of Mind)

Hari, R., et al. "Centrality of Social Interaction in Human Brain Function." *Neuron* 88, no. 1 (2015): 181-93.

Mentalizing deficits

Moran, J.M., et al. "Social-Cognitive Deficits in Normal Aging." *J Neurosci* 32, no. 16 (2012): 5553-61. (Fig. 4)

Jacques, P.L. St. et al. "Functional Neuroimaging Studies of Aging and Emotion: Fronto- Amygdalar Differences During Emotional Perception and Episodic Memory." *J Int Neuropsychol Soc.* 15, no. 6 (2009): 819-25.
Statistics from Figure 4

Social interactions and grey matter volume (PFC)

Lewis, P.A., et al. "Ventromedial Prefrontal Volume Predicts Understanding of Others and Social Network Size." *Neuroimage* 57, no. 4 (2011): 1624-29.

Social interactions and amygdalar volume

Bickart, K.C., et al. "Amygdala Volume and Social Network Size in Humans." *Nat Neurosci* doi:10.1038/nn.2724 (2010).

Social interactions and grey matter volume (temporal lobe)

Kanai, R., s "Online Social Network Size Is Reflected in Human Brain Structure." *Proc Biol Sci* 279, no. 1732 (2012): 1327-34.

Section Five: The boss from hell

Story of a bad boss

"Think You Can Top These Horrible Boss Stories?". The Patriot-News, http://blog.pennlive.com/life/2011/07/think_you_can_top_these_horrib.html (2011).

Quality of interactions, not just quantity, important (quote)

Yang, Y.C. *et al* "Social Relationships and Physiological Determinants of Longevity across the Human Life Span." *PNAS* 113, no. 3 (2015): doi/10.1073/pmans.1511085112.

Section Six: Drop the ego

Type of interactions matter

Ybarra, O., P. Winkielman, E. Burnstein, I. Ye, and L. Kavanaugh. "Friends (and Sometimes Enemies) with Cognitive Benefits." *Soc Psychol & Person Sci* 2, no. 3 (2011): 253-61.

Quotes from Rebecca Adams

Williams, A. "Friends of a Certain Age: Why Is It Hard to Make Friends over 30?" *New York Times*, 2012.

Intergenerational activities are important

Davis, L., *et al*. "Intergenerational Play and Learning." *International Journal of Early Childhood* 34, no. 2 (2002): 42-49.

Skropeta, C.M. *et al*. "An Evaluative Study of the Benefits of Participating in Intergenerational Playgroups in Aged Care for Older People ". *BMC Geriatrics* 14 (2014): 109.

Improvement in elderly brains

Ostir, G. V., *et al*. "Onset of Frailty in Older Adults and the Protective Role of Positive Affect. Journal of Psychology and Aging." *Journal of Psychology and Aging* 19, no. 3 (2004): 402-08.

Improvements in pediatric brains

Fromberg, D., and D. Bergen. *Play from Birth to Twelve: Contexts, Perspectives, and Meanings*. New York: Garland Press, 1998.
p. 241 – 288

Section Seven: All the lonely people

20 – 40 percent increase in loneliness in older populations

Newall, N.E., et al. "Causal Beliefs, Social Participation, and Loneliness among Older Adults: A Longitudinal Study." *Journal of Soc and Personal Relat* 26, no. 2-3 (2009): 273-90.

The U-shaped curve

Qualter, P., et al. "Loneliness across the Life Span." *Perspect Psych Sci* 10, no. 2 (2015): 250 -64.

Loneliness as a risk factor for depression in older populations

Cacioppo, J. T., et al. "Loneliness as a Specific Risk Factor for Depressive Symptoms: Cross-Sectional and Longitudinal Analyses." *Psychol & Aging* 21, no. 1 (2006): 140-51.

Definition of loneliness

Luhmann, M., and L. Hawkley. "Age Differences in Loneliness from Late Adolescence to Oldest Old Age." *Dev Psychol* 52, no. 6 (2016): 943-59.

Schulz, R. "Effects of Control and Predictability on the Physical and Psychological Well-Being of the Institutionalized Aged." *J Pers Soc Psychol* 33, no. 5 (1976): 563-73.

UCLA Loneliness Scale

Hughes, M.E., et al. "A Short Scale for Measuring Loneliness in Large Surveys: Results from Two Population-Based Studies." *Res Aging* 26, no. 6 (2004): 655-72.

Section Eight: Where social isolation leads

Poorer grooming habits

Perissinotto, C.M., *et al.* "Loneliness in Older Persons: A Predictor of Functional Decline and Death." *Arch Intern Med* 172, no. 14 (2012): 1078-83.

Depression in healthy seniors no different, physical disability is key

Roberts, R.E. "Does Growing Old Increase the Risk for Depression?". *Am J Psychiatry* 154, no. 10 (1997): 1384-90.

Loneliness, viral infections, and cancer

Gammon, K. "Why Loneliness Can Be Deadly." LiveScience, <http://www.livescience.com/18800-loneliness-health-problems.html>. 2012

Lonely seniors have poorer immune function

Hawkey, L.C., *et al.* "Loneliness, Dysphoria, Stress and Immunity: A Role for Cytokines." In *Cytokines: Stress and Immunity*, edited by N.P. Plotnikoff. Boca Raton, FL: CRC/Taylor & Francis, 2007.

Loneliness and declines in cognition

Cacioppo, J. T., and L. C. Hawkey. "Perceived Social Isolation and Cognition." *Trends in Cognitive Sciences*, 13, no. 10 (2009): 447-54.

Loneliness, stress levels and changes cardiovascular health

Cacioppo, J.T., *et al.* "The Neuroendocrinology of Social Isolation ". *Ann Rev Psych* 2015. 66: 9.1-9.35 66 (2015): 9.1-9.5.

Loneliness and increases in mortality rates

Perissinotto, C.M., *et al.* "Loneliness in Older Persons: A Predictor of Functional Decline and Death." *Arch Intern Med* 172, no. 14 (2012): 1078-83.

Kim, L. "Loneliness Linked to Serious Health Problems and Death Among Elderly." *University of California San Francisco*. (2012).

<http://www.ucsf.edu/news/2012/06/12184/loneliness-linked-serious-health-problems-and-death-among-elderly>

Section Nine: Inflammation of the brain

Molly Holderness quote

Melville, B.E. *The Big Book of Senior Moments*. New York: Skyhorse Publishing, 2015. p. 69

The work of Laura Fratiglioni

Fratiglioni, L., *et al.* "Influence of Social Network on Occurrence of Dementia: A Community-Based Longitudinal Study." *Lancet* 355, no. 9212 (2000): 1315-19.

Types of inflammation

Szalay, J. "Inflammation: Causes, Symptoms & Anti-Inflammatory Diet." (2015) LiveScience, <http://www.livescience.com/52344-inflammation.html>.

Inflammation and the brain

Perry, V.H. "The Influence of Systemic Inflammation on Inflammation in the Brain: Implications for Chronic Neurodegenerative Disease." *Brain Behav Immun* 18, no. 5 (2004): 407-13.

Loneliness damages white matter

Molesworth, T., *et al.* "Social Network Diversity and White Matter Microstructural Integrity in Humans." *Soc Cogn Affect Neurosci* 10, no. 9 (2015): 1169-76.

Verstynen hypothesis

Wald, C. "Better together." *Nature* 531 (2016): S14 – S15

Section Ten: A cultural shift

Friendship number peaks at age 25

Bhattacharya, K *et al* "Sex differences in social focus across the life cycle in humans." *R Soc Open Sci.* 2016 Apr; 3(4): 160097.

Seventy-five years to eighty year changes, loneliness, gender and nationality

Luhmann, M., and L. Hawkey. "Age Differences in Loneliness from Late Adolescence to Oldest Old Age." *Dev Psychol* 52, no. 6: 943-59.

Overall health and loneliness

Cohen-Mansfield, J. "The Old, Old-Old, and the Oldest Old: Continuation or Distinct Categories? An Examination of the Relationship between Age and Changes in Health, Function, and Wellbeing." *Int J Aging Hum Dev* 77, no. 1 (2013): 37-57.

Section Eleven: Face time

Prosopagnosia biology

Lee, Y., et al. "Three Cases of Developmental Prosopagnosia from One Family: Detailed Neuropsychological and Psychophysical Investigation of Face Processing." *Cortex* 46, no. 8 (2010): 949-64.

Oliver Sacks and face blindness

Tsoulis-Reay, A. "What It's Like to Be Profoundly Face-Blind." *New York Magazine*, <http://nymag.com/scienceofus/2015/07/what-its-like-to-be-profoundly-face-blind.html>. (2015)

Changes in fusiform connectivity

Thomas, C., et al. "Reduction in White Matter Connectivity, Revealed by Diffusion Tensor Imaging, May Account for Age-Related Changes in Face Perception." *J. Cogn. Neurosci. Biobehav. Rev.* 20 (2008): 268-84.

Heritability of prosopagnosia

Grueter, M., et al. "Hereditary Prosopagnosia: The First Case Series." *Cortex* 43, no. 6 (2007): 734-49.

Face identification declines with age

Germine, L. T., et al. "Where Cognitive Development and Aging Meet: Face Learning Ability Peaks after Age 30." *Cognition* 118, no. 201-210 (2011).

Emotional display identification selectively declines with age

Ruffman, T., et al. "A Meta-Analytic Review of Emotion Recognition and Aging: Implications for Neuropsychological Models of Aging." *Neurosci. Biobehav. Rev.* 32 (2008): 863-81.

Loss of social interactivity in aging humans and monkeys

Almeling, L., et al. "Motivational Shifts in Aging Monkeys and the Origins of Social Selectivity." *Curr Biol* 26, no. 13 (2016): 1744-49.

Section Twelve: Dance the night away

Mikhail Baryshnikov quote

<http://www.brainyquote.com/quotes/quotes/m/mikhailbar131525.html>

Dancing improves cognition

Kattenstroth, J.C. et al "Six Months of Dance Intervention Enhances Postural, Sensorimotor and Cognitive Performance in Elderly without Affecting Cardio-Respiratory Functions." *Front Aging Neurosci* 5, no. 5 (2013): doi: 10.3389/fnagi.2013.00005.

Prevention of falls

Cameron, I.D., and et al. "Interventions for Preventing Falls in Older People in Care Facilities and Hospitals." *Cochrane Database Syst Rev* 12, no. 12 (2012): 10.1002/14651858.CD005465.pub3.

Cost of falls

"Costs of Falls among Older Adults." Center for Disease Control, <http://www.cdc.gov/homeandrecreationalafety/falls/fallcost.html>.

"The Incidence and Cost of Falls Injury Among Older People In New South Wales 2006/7." <http://www.health.nsw.gov.au/falls/Publications/incidence-cost-of-falls.pdf>

Section Thirteen: The human touch

The importance of physical contact in human populations

Fields, T. "Touch for Socioemotional and Physical Well-Being: A Review."
Dev Rev 30 (2010): 367-83.

Fifteen minutes a day

Konnikova, M. "The Power of Touch." *The New Yorker* (2015).

CHAPTER TWO – Your Happiness

Section One

Grumpy old man to do list greeting card

<http://www.nobleworkscards.com/9729-grumpy-old-man-list-funny-birthday-greeting-card-mike-shiell.html>

Ed Diener and happiness

Diener, E. "Subjective Well-Being: The Science of Happiness and a Proposal for a National Index." *American Psychologist* 55 (2000): 34 - 43.

Marty Seligman and optimism

Seligman, Martin E. P. *Flourish: A Visionary New Understanding of Happiness and Well-Being*. New York: Atria Books, 2012.
p. 189

Section Two: Onward, mostly upward

Older people really are happier

Sutin, A.R., et al. "The Effect of Birth Cohort on Well-Being: The Legacy of Economic Hard Times." *Psychol Sci* 24, no. 3 (2013): 379-85.

Marriage stability

Walker, C. "Some Variations in Marital Satisfaction." In *Equalities and Inequalities in Family Life*, edited by R.C.J. Peel, 127-39. London: Academic Press, 1977.

Schacter, Daniel L., Daniel T. Gilbert, and Daniel M. Wegner. "Introducing Psychology." 91 - 127. New York: Worth Publishers, 2013. p. 340

Emotional stability and agreeableness figures

Roberts, B.W., and D. Mroczek. "Personality Trait Change in Adulthood." *Curr Dir Psychol Sci* 17, no. 1 (2008): 31-35.

“Happiness Increases With Age, Across Generations.”
<https://www.psychologicalscience.org/news/releases/happier-with-age.html#.WSWVqRPYuV5>

Quote from Sutin study

Simring, K.S. "Age Brings Happiness." *Scientific American Mind* 24, no. 2 (2013): 9.

1,546 people study

Thomas, M.L., et al. "Paradoxical Trend for Improvement in Mental Health with Aging: A Community-Based Study of 1,546 Adults Aged 21–100 Years." *J. Clin. Psychiatry* 77, no. 8 (2016): e1019–e25.

The boost doesn't last forever

Sutin, A.R., et al. "The Trajectory of Depressive Symptoms across the Adult Life Span." *JAMA Psychiatry* 70, no. 8 (2013): 803-11.

Section Three: What Satchmo says

What a Wonderful World

Armstrong, Louis. *What A Wonderful World*. ABC, 1968. Single.

Louis Armstrong quote

"Smashed Hits: How Political Is What a Wonderful World?". *BBC News Magazine* <http://www.bbc.com/news/magazine-16118157> (2011).

Positivity Effect defined

Mather, M. "The Affective Neuroscience of Aging." *Annu Rev Psychol* 67 (2016): 213-38.

Results of attention and memory

Mather, M., and L.L. Carstensen. "Aging and Motivated Cognition: The Positivity Effect in Attention and Memory." *Trends Cogn Sci.* 9, no. 10 (2005): 496-502.

Positivity effects on various memory subsystems and attention

Reed, A.E., and L.L. Carstensen. "The Theory Behind the Age-Related Positivity Effect." *Frontiers in Psychology* 3 (2012): 339-53.

Section Four: Lessons from London

Socioemotional Selectivity Theory

Carstensen, L. L. *et al.* "Taking Time Seriously: A Theory of Socioemotional Selectivity." *Am Psych* 54, no. 3 (1999): 165-81.

"FADE" changes

Jacques, P.L. St., *et al.* "Functional Neuroimaging Studies of Aging and Emotion: Fronto-Amygdalar Differences During Emotional Perception and Episodic Memory." *J. Int Neuropsychol Soc* 15, no. 6 (2009): 819-25.

Section Five: Roller-coaster grandpa

Roller-coaster grandpa

Associated Press. "73-Year-Old Man Rides Roller Coaster for 12,000th Time." *New York Post*, <http://nypost.com/2015/06/27/73-year-old-man-rides-roller-coaster-for-12000th-time/>.

Roller-coaster grandpa quote

Mentor to Six Figures.
<https://www.youtube.com/watch?v=o3G3oKv1HTY>.

Risk-taking and the Certainty Effect

Mather, M., *et al.* "Risk Preferences and Aging: The "Certainty Effect" in Older Adults' Decision Making." *Psychol Aging* 27, no. 4 (2012): 801-16.

Risk-taking and changing motivations

Zou, X., *et al.* "In Pursuit of Progress: Promotion Motivation and Risk Preference in the Domain of Gains." *J Personal & Soc Psych* 106 (2014): 183-201.

Motivations for happiness of younger and older adults

Halvorson, H.G. "How Happiness Changes with Age." *The Atlantic*
<http://www.theatlantic.com/health/archive/2013/05/how-happiness-changes-with-age/276274/> (2013).

Section Six: Smell a rat?

Physician scam story

Joyce, P. "The Sweetheart Scam: Beware the Wolf in Sheep's Clothing."
<https://www.agingcare.com/Articles/the-sweetheart-scam-169804.htm>.

MetLife Study about cost

Weisbaum, H. "Expert Warns About Scams Targeting Seniors."
<http://www.today.com/money/expert-warns-about-scams-targeting-seniors-6C10486914>.

Older people are more gullible – insula involvement

Castle, E., et al. "Neural and Behavioral Bases of Age Differences in Perceptions of Trust." *PNAS* 109, no. 51 (2012): 20848–52.

Prediction error and the 20% figure

Samanez-Larkin, G.R. "Adult Age Differences in Frontostriatal Representation of Prediction Error but Not Reward Outcome." *Cogn Affect Behav Neurosci.* 14, no. 2 (2014): 672-82.

Highway to Hell and risk-taking

Samanez-Larkin, G.R., and B. Knutson. "Decision Making in the Ageing Brain: Changes in Affective and Motivaiton Circuits." *Nat Rev Neurosc* 16, no. 5 (2015): 278-89.

Section Seven: A darker shade of gray

Death of Keith Emerson

Puenta, M. "Coroner: Keith Emerson Killed Himself With a Gun." *USA Today*, 2016.

Herman, A. "Why We Need To Talk About Keith Emerson's Carpal Tunnel Syndrome," <http://www.laweekly.com/music/why-we-need-to-talk-about-keith-emersons-carpal-tunnel-syndrome-6723079>

Definition of depression in elderly

Naprawa, A.Z. "Spotting Depression in Older Adults." University of California, Berkeley, <http://www.berkeleywellness.com/healthy-mind/mood/article/spotting-depression-older-adults>.

First quote about depression

U.S. Surgeon General. "Older Adults and Mental Health. In: Mental Health: A Report of the Surgeon General." www.surgeongeneral.gov/library/mentalhealth/chapter5/sec1.html. (1999).

Second quote about depression

Zhao, K.X., et al. "Age and Risk for Depression among the Elderly: A Meta-Analysis of the Published Literature." *CNS Spectr* 17, no. 3 (2012): 142-54.

Disease states and depression

Huang, C.Q., et al. "Chronic Diseases and Risk for Depression in Old Age: A Meta-Analysis of Published Literature." *Ageing Res Rev.* 9, no. 2 (2010): 131-41.

Living situation vs nursing homes, rates of depression percentage

Leon, F.G., et al. "Depression and Comorbid Medical Illness: Therapeutic and Diagnostic Challenges." *J Fam Pract* (2003): S19-33.

Projections into 2020

Zhao, K.X., et al. "Age and Risk for Depression among the Elderly: A Meta-Analysis of the Published Literature." *CNS Spectr* 17, no. 3 (2012): 142-54.

Section Eight: Dopamine's decline

General review dopaminergic system

Bissonette, G.B., and M.R. Roesch. "Development and Function of the Midbrain Dopamine System: What We Know and What We Need To." *Genes Brain Behav* 15, no. 1 (2016): 62-73.

J. Nolte, *Essentials of the Human Brain*. Philadelphia, PA: Mosby, Elsevier, 2010. P. 273-275

Role in addictive behaviors

Oliva, I., and M.J. Wanat. "Ventral Tegmental Area Afferents and Drug-Dependent Behaviors." *Front Psychiatry* 30 (2016): 10.3389/fpsy.2016.00030.

Section Nine: The mouse that didn't roar

Dopamine-deficient mice starve to death

Szczyepka, M.S., and et al. "Feeding Behavior in Dopamine-Deficient Mice." *PNAS* 96, no. 12 (1999): 12138-43.

Dopamine-synthesis loss

Ota, M., et al. "Age-Related Decline of Dopamine Synthesis in the Living Human Brain Measured by Positron Emission Tomography with L-[Beta-11c]Dopa." *Life Sci* 79, no. 9 (2006): 730-36.

Receptor loss

Volkow, N.D, et al. "Association between Age-Related Decline in Brain Dopamine Activity and Impairment in Frontal and Cingulate Metabolism." *Am J Psychiatry* 157, no. 1 (2000): 75-80.

Cell loss

Costa, K.M. "The Effects of Aging on Substantia Nigra Dopamine Neurons." *J Neurosci* 34, no. 46 (2014): 15133 -4.

Dopamine-deficient depression

Dailly, E., et al. "Dopamine, Depression and Antidepressants." *Fund & Clin Pharm* 18, no. 6 (2004): 601-07.

Dopamine and reward-predictions

Schultz, W. "Dopamine Reward Prediction- Error Signalling: A Two-Component Response." *Nat Rev Neurosc* 17, no. 3 (2016): 183-95.

Dopamine and interior motivations

Westbrook, A., and T.S. Braver. "Dopamine Does Double Duty in Motivating Cognitive Effort." *Neuron* 89 (2016): 695-710.

Dopamine and risk-taking

Norbury, A., et al. "Dopamine Modulates Risk-Taking as a Function of Baseline Sensation-Seeking Trait." *J Neurosci* 33, no. 32 (2013): 12982-86.

Dopamine and attentional networks

Dang, L.C. "Dopamine Supports Coupling of Attention-Related Networks." *J. Neurosci* 32, no. 28 (2012): 9582-87.

Section Ten: Awakenings

Awakenings

Sacks, Oliver. 1990. *Awakenings*. New York: HarperPerennial.

Restoration of reward-prediction

Rumana, C., et al. "Dopamine Restores Reward Prediction Errors in Old Age." *Nat Neurosci* 16, no. 5 (2013): 648-53.

Side effects of L-Dopa

Foster, H.D., and A. Hoffer. "The Two Faces of L-Dopa: Benefits and Adverse Side Effects in the Treatment of Encephalitis Lethargica, Parkinson's Disease, Multiple Sclerosis and Amyotrophic Lateral Sclerosis." *Med Hypotheses* 62, no. 2 (2004): 177-81.

Increasing optimism

Sharot, T., and et al. "How Dopamine Enhances an Optimism Bias in Humans." *Curr Biol* 22, no. 16 (2012): 1477-81.

Optimism quote

Scicurious. "Dopamine Goggles Make the Glass Half Full." *Scientific*

American <https://blogs.scientificamerican.com/scicurious-brain/dopamine-goggles-make-the-glass-half-full/> (2013).

Attitude towards aging and 7.5 year boost

Levy, B.R., et al. "Longevity Increased by Positive Self-Perceptions of Aging." *J Pers & Soc Psych* 83 (2002): 261-70.

Oprah Quote

<http://www.quotationspage.com/quote/31148.html>

Oprah Winfrey gratitude journal

Winfrey, P. "What Oprah Knows About Gratitude."
<http://www.oprah.com/spirit/Oprahs-Gratitude-Journal-Oprah-on-Gratitude>.

Research results of “gratitude visit” and “three good things”

Seligman, M.E.P., et al. "Positive Psychology in Progress: Empirical Validation of Interventions." *Am Psych* 60 (2005): 410-21.

Dirk Kummerle quote

Kummerle, D. A. "Positive Psychology and 21st Century Opportunities." Massachusetts School for Professional Psychology,
<https://dirkmspp.wordpress.com/2013/07/07/positive-psychology-and-21st-century-opportunities/>.

Marty Seligman’s PERMA

Seligman, Martin E. P. *Flourish: A Visionary New Understanding of Happiness and Well-Being*. New York: Atria Books, 2012.
p. 16 -20

CHAPTER THREE – Your Stress

Section One

Older people are less stressed than younger people

"Stress In America." American Psychological Association,
<http://www.apa.org/news/press/releases/stress/2016/coping-with-change.PDF>.

Section Two: Running from the grizzly

General review of fight-or-flight response

Schacter, Daniel L., Daniel T. Gilbert, and Daniel M. Wegner. "Introducing Psychology." 470 - 471. New York: Worth Publishers, 2013.

Section Three: Cranking it up

Diurnal cortisol levels

"Normal Values of Cortisol and ACTH." Cushing's Support and Research Foundation. <https://csrf.net/doctors-answers/diagnosis-qa/normal-values-of-cortisol-and-acth/>

Wilson, J. W. *Adrenal Fatigue: The 21st Century Stress Syndrome*. Petaluma, CA: Smart Publications, 2010.p. 83 - 97

Inverted-U of cortisol regulation

Sapolsky, R.M. "Stress and the Brain: Individual Variability and the Inverted-U." *Nat Neurosci* 18, no. 10, 1344 - 1348 (2015).

Cortisol regulation changes with age

C.Wrosch, *et al.* "Cortisol Secretion and Functional Disabilities in Old Age: Importance of Using Adaptive Control Strategies." *Psychosom Med* 71, no. 9 (2009): 996-1003.

Sapolsky, R.M. *Why Zebras Don't Get Ulcers, 3rd Edition*. New York: St. Martin's Griffin, 2004. p. 243 – 245 *Prolonged stress deregulates cortisol metabolism*

Sapolsky, R.M. *Why Zebras Don't Get Ulcers, 3rd Edition*. New York: St. Martin's Griffin, 2004. p. 249

Section Four: A dysfunctional damper

A Christmas Story

Jean Shepherd, *A Christmas Story*, 35mm, directed by Bob Clark (1983; USA: MGM.), Film

Prolonged stress affects on the hippocampus and amygdala

Chattarji, S *et al.* "Neighborhood matters: divergent patterns of stress-induced plasticity across the brain." *Nat Neurosci* 18, no. 10, 1364 - 1375 (2015).

Randall, M. "The Physiology of Stress: Cortisol and the Hypothalamic-Pituitary-Adrenal Axis." <http://dujs.dartmouth.edu/2011/02/the-physiology-of-stress-cortisol-and-the-hypothalamic-pituitary-adrenal-axis/#.V8TL4IzoCS0>.

Prolonged stress damages the PFC

Arnsten, A.F.T. "Stress weakens prefrontal networks: molecular insults to higher cognition." *Nat Neurosci* 18, no. 10, 1376 - 1385 (2015).

Amygdalar reactions to stressful pictures

Mather, M., *et al.* "Amygdala Responses to Emotionally Valenced Stimuli in Older and Younger Adults." *Psych Sci* 15, no. 4 (2004): 259-63.

Magic number is "12"

Schafer, M.H., and T.P. Shippee. "Age Identity, Gender, and Perceptions of Decline: Does Feeling Older Lead to Pessimistic Dispositions About Cognitive Aging?". *J Gerontol B Psychol Sci Soc Sci* 65B, no. 1 (2010): 91-96.

Marquez quote

Gabriel Garcia Marquez, *Memories of My Melancholy Whores*. New York: Vintage International, 2005.

Hippocampal neurogenesis

Barolow, C., and S.D. Targum. "Hippocampal Neurogenesis: Can It Be a Marker for a New Antidepressant?". *Psychiatry (Edgmont)* 4, no. 5 (2007): 18-20.

Hippocampal neurogenesis and human memory

Siebzehnrubl, F.A., and I. Blumcke. "Neurogenesis in the Human Hippocampus and Its Relevance to Temporal Lobe Epilepsies.". *Epilepsia Suppl* 5 (2008): 55-65.

Section Five: Wait, females are a different story

Sweat, lab animals and sex-based differences in stress responses

Sorge, R.E., et al. "Olfactory Exposure to Males, Including Men, Causes Stress and Related Analgesia in Rodents." *Nature Methods* 11 (2014): 629-32.

Hippocampal volume shrinkage greater for men

Bouix, S., et al. "Hippocampal Shape Analysis Using Medial Surfaces." *Neuroimage* 25 (2005): 1077-89.

Pruessner, J.C. et al. "Age and Gender Predict Volume Decline in the Anterior and Posterior Hippocampus in Early Adulthood." *J. Neurosci.* 21 (2001): 194-200.

Four-fold hippocampal volume association

Ebner, N.C., et al. "Hormones as "Difference Makers" in Cognitive and Socioemotional Aging Processes." *Front Psychol*
<http://dx.doi.org/10.3389/fpsyg.2014.01595> (2015).

Older women are more susceptible to cortisol's negative effects on cognition and emotional regulation

Burke, H.M., et al. "Depression and Cortisol Responses to Psychological Stress: A Meta-Analysis.". *Psychoneuroendocrinology* 30 (2005): 846-56.

Comijs, H.C., et al. "The Association between Serum Cortisol and Cognitive Decline in Older Persons.". *Am. J. Geriatr. Psychiatry* 18 (2010): 42-50.

This effect on women three times greater

Ebner, N.C., et al. "Hormones as "Difference Makers" in Cognitive and Socioemotional Aging Processes." *Front Psychol* <http://dx.doi.org/10.3389/fpsyg.2014.01595> (2015).

Prevalence rates of Alzheimer's

Alzheimer's Association "2015 Alzheimer's Disease Facts and Figures." *Alzheimer's and Dementia* 11, no. 3 (2015): 332 +.

Possible reasons for female prevalence – estrogen and genetics

Kang, JH, and F. Grodstein. "Postmenopausal Hormone Therapy, Timing of Initiation, Apoe and Cognitive Decline." *Neurobiol Aging* 33, no. 7 (2012): 1129-37.

Section Six: Being mindful of mindfulness

Jon Kabat-Zinn biography

Simon, R., and M.S. Wylie. "The Mind-Body Magic of Jon Kabat-Zinn: One Man's Quest to Bring Therapeutic Mindfulness to Medicine." *Psychtherapy Networks* <https://www.psychotherapynetworker.org/blog/details/433/the-mind-body-magic-of-jon-kabat-zinn> (2014).

Time magazine

Pickert, K. "The Mindful Revolution." *Time*, Feb 3, 2014.

Mindfulness training – Jon Kabat-Zinn quote

Kabat-Zinn, J. *Wherever You Go, There You Are: Mindfulness Meditation in Everyday Life (1st Edition)*. New York: Hyperion, 1994.

Two components to mindfulness

Quaglia, J.T., et al. *From Conceptualization to Operationalization of Mindfulness*. In *Handbook of Mindfulness*. New York: Guilford Press, 2014.

8-week manualized training

Teasdale, J., M. *et al.* *The Mindful Way Workbook*. New York: Guilford Press, 2014.

The calming effects of mindfulness

Prakesh, R.S., *et al.* "The Role of Emotion Regulation and Cognitive Control in the Association between Mindfulness Disposition and Stress." *Psychol Aging* 30, no. 1 (2015): 160-71.

Mindfulness, sleep and cortisol

Brand, S., *et al.* "Influence of Mindfulness Practice on Cortisol and Sleep in Long-Term and Short-Term Meditators." *Neuropsychobiology* 65, no. 3 (2012): 109-18.

Mindfulness and mental health

Kumar, S., *et al.* "Impact of Mindfulness-Based Stress Reduction (MBSR) on Depression among Elderly Residing in Residential Homes." *Nurs J India* 105, no. 6 (2014): 248-51

Vøllestad, J., *et al.* "Mindfulness- and Acceptance-Based Interventions for Anxiety Disorders: A Systematic Review and Meta-Analysis." *Br J Clin Psychol* 51, no. 3 (2012): 239-60.

Mindful practice, loneliness and general mood

Creswell, J.D., *et al.* "Mindfulness-Based Stress Reduction Training Reduces Loneliness and Pro-Inflammatory Gene Expression in Older Adults: A Small Randomized Controlled Trial." *Brain Behav Immun* 26, no. 7 (2012): 1095-101.

Immune effects of mindfulness

Davidson, R.J., *et al.* "Alterations in Brain and Immune Function Produced by Mindfulness Meditation." *Psychosom Med* 65, no. 4 (2003): 564-70.

Mindfulness and cardiovascular issues

Loucks, E.B., *et al.* "Positive Associations of Dispositional Mindfulness with Cardiovascular Health: The New England Family Study. ." *Int J Behav Med*. DOI 10.1007/s12529-014-9448-9. (2014).

Mindfulness quote summarizing changes in affect

Geiger, P.J., et al. "Mindfulness-Based Interventions for Older Adults: A Review of the Effects on Physical and Emotional Well-Being." *Mindfulness (N Y)*. 7, no. 2 (2016): 296-307.

Mindfulness and attentional issues

Geiger, P.J., et al. "Mindfulness-Based Interventions for Older Adults: A Review of the Effects on Physical and Emotional Well-Being." *Mindfulness (N Y)*. 7, no. 2 (2016): 296-307.

Attentional blink and mindfulness

Leeuwen, S. Van, et al. "Age Effects on Attentional Blink Performance in Meditation." *Conscious Cogn* 18, no. 3: 593-99.

Mindfulness and visuospatial processing, working memory and general executive function

Zeidan, F., et al. "Mindfulness Meditation Improves Cognition: Evidence of Brief Mental Training." *Conscious Cogn* 19, no. 2 (2010): 597-605.

Mindfulness training on verbal fluency and cognitive flexibility

Marciniak, R., et al. "Effect of Meditation on Cognitive Functions in Context of Aging and Neurodegenerative Diseases." *Front Behav Neurosci*. 8 (2014): 17.

Section Seven: Full-court press

Phil Jackson bio

"Phil Jackson: Biography." A&E Television Networks, <http://www.biography.com/people/phil-jackson-224897>. (2016)

Phil Jackson quotes

Phil Jackson, Hugh Delehanty, *Sacred Hoops: Spiritual Lessons of a Hardwood Warrior*. New York: Hyperion Books, 1995.

Phil Jackson salary

Ramona Shelboure, Chris Broussard, "Phil Jackson Signs With Knicks." *ESPN*, March 17, 2014, http://www.espn.com/new-york/nba/story/_/id/10607795/phil-jackson-deal-new-york-knicks-finalized

General review article neural substrates mindfulness

Grecucci, A., *et al.* "Mindful Emotion Regulation: Exploring the Neurocognitive Mechanisms Behind Mindfulness." *Biomed Res Int* 670724. doi: 10.1155/2015/670724 (2015).

Cortisol levels, mixed results data

Tang, Y., *et al.* "The Neuroscience of Mindfulness Meditation." *Nat Rev Neurosci* 16, no. 14 (2015): 213-25.

Amygdala activation/deactivation studies

Taylor, V.A., *et al.* "Impact of Mindfulness on the Neural Responses to Emotional Pictures in Experienced and Beginner Meditators." *Neuroimage* 57, no. 4 (2011): 1524-33.

Section Eight: Attention on attention

Role of the ACC in mindfulness practice

Tang, Y., *et al.* "Central and Autonomic Nervous System Interaction Is Altered by Short-Term Meditation." *Proc Natl Acad Sci U S A.* 106, no. 22 (2009): 8865-70.

Section Nine: Of mice and men

Flowers for Algernon

Daniel Keyes, *Flowers For Algernon*. Orlando: Harcourt Inc., 1994.

CHAPTER FOUR – Your Memory

Section One

George Burns bio and quotes

"George Burns Biography."

http://www.imdb.com/name/nm0122675/bio?ref_=nm_ov_bio_sm.

Wikipedia. "George Burns." https://en.wikipedia.org/wiki/George_Burns

Wikiquote. "George Burns."

https://en.wikiquote.org/wiki/Talk:George_Burns.

Section Two: Many types of memory

Many types of memory

Squire L and Kandel E. *Memory: From Mind to Molecules*. New York: Scientific American Library, 1999. p. 72 - 76

Components of declarative memory

Gardner, E.P., and J.H. Martin. "Learning and memory." In *Principles of Neural Science, 5th Edition*, edited by E.R Kandel and et al. New York: McGraw Hill, 2000.
p. 1446-1447

Section Three: Oh, God! It's George Burns

Core language components are preserved into old age

Shafiq A. and L.K. Tyler. "Language in the aging brain: The network dynamics of cognitive decline and preservation." *Science* 346 (2014): 583-586.

Procedural memory preservation

Smith, C.D., and et al. "Memories That Last in Old Age: Motor Skill Learning and Memory Preservation." *Neurobiol Aging* 26, no. 6 (2005): 883-90.

Age-related wisdom (including quote about wisdom)

Lindenberger U. "The Aging Brain: Human cognitive aging: *Corriger la fortune?*" *Science* 346 (2014): 572-78.

Section Four: Now for the bad news

Finding Nemo

Finding Nemo. Directed by Andrew Stanton, Lee Unkrich. USA: Buena Vista Pictures, 2003. Film.

Baddeley's original definition of working memory

Baddeley, A.D., and G.J. Hitch. "Working Memory." In *Attention and Performance*, edited by S. Dornic. Hillsdale, NJ: Lawrence Erlbaum, 1974

Baddeley, Alan "Working Memory: Theories, Models and Controversies". *Annu Rev. Psychol* (2012) 63: 1 – 29.

Working memory naturally declines with old age

Buckner, R.L. "Memory and Executive Function in Aging and Ad: Multiple Factors That Cause Decline and Reserve Factors That Compensate." *Neuron* 44, no. 1 (2004): 195-208.

Park, D.C., *et al.* "Mediators of Long-Term Memory Performance across the Life Span." *Psychol Aging* 11, no. 4 (1996): 621-37.

Working memory is highly heritable

Blokland, G.A.M., *et al.* "Heritability of Working Memory Brain Activation." *J Neurosci* 31, no. 30 (2011): 10882–90.

Executive function is highly heritable

Friedman, N.P., *et al.* "Individual Differences in Executive Functions Are Almost Entirely Genetic in Origin." *J Exp Psychol Gen.* 137, no. 2 (2008): 201-25.

Section Five: Down for the count

Mohammad Ali's interview

ibhof2. "Muhammed Ali - "This Is Your Life"."
<https://www.youtube.com/watch?v=ZWZOBX1vE7A>.

Definition of episodic memory

Brickman, A.M., and Y. Stern. "Aging and Memory in Humans." *Encycl Neurosci* 1 (2009): 175-80.

Woman with eidetic autobiographical episodic memory

Parker, E.S., et al. "A Case of Unusual Autobiographical Remembering." *Neurocase* 12 (2006): 35-49.

33% drop in episodic performance

Kinugawa, K., et al. "Aging-Related Episodic Memory Decline: Are Emotions the Key?". *Front Behav Neurosci.* 7, no. 2 (2013): 10.3389/fnbeh.2013.00002.

Source memory may be the problem

Schacter, D.L., et al. "The Relation between Source Memory and Aging." *Psychol Aging* 6, no. 4 (1991): 559-68.

Default mode network defined

Buckner, R.L., et al. "The Brain's Default Network Anatomy, Function, and Relevance to Disease." *Ann. N.Y. Acad. Sci.* 1124 (2008): 1-38.

Episodic memory involvement in the default network

Jeong, W., et al. "Episodic Memory in Aspects of Large-Scale Brain Network." *Front Hum Neurosci* 9 (2015): 10.3389/fnhum.2015.00454.

Age-related episodic memory structural changes and default network

Kinugawa, K., et al. "Aging-Related Episodic Memory Decline: Are Emotions the Key?". *Front Behav Neurosci* 7 (2013): 10.3389/fnbeh.2013.00002.

Section Six: It's on the tip of my tongue

Tip of the Tongue explained

Brickman, A.M., and Y. Stern. "Aging and Memory in Humans." *Encycl Neurosci* 1 (2009): 175-80.

Erosion of Tip of the Tongue abilities

Shafto A. and L.K. Tyler. "Language in the aging brain: The network dynamics of cognitive decline and preservation." *Science* 346 (2014): 583-586.

TOT failure – neurological substrates

Shafiq, M.A., et al. "Word Retrieval Failures in Old Age: The Relationship between Structure and Function." *J Cogn Neurosci* 22, no. 7 (2010): 1530-40.

Timeline issues

Fettes, K. Aleisha. "When Exactly Does Your Memory Start Declining?" *Womens' Health* March 27, 2015 (2015).

Hartshorne, J.K., and L.T. Germine. "When Does Cognitive Functioning Peak? The Asynchronous Rise and Fall of Different Cognitive Abilities across the Life Span." *Psychol Sci* 26, no. 4 (2015): 433-43.

Section Seven: By hook or by crook

Star-Trek episode

http://www.startrek.com/database_article/arena

Mythbusters Gorn Cannon

<https://vimeo.com/20117750>

How normal syntactic processing works

Poeppel, D. "The Neuroanatomic and Neurophysiological Infrastructure for Speech and Language." *Curr Opin Neurobiol* 28 (2014): 142-49.

Lexical representations (vocabulary changes)

Buckner, R.L. "Memory and Executive Function in Aging and Ad: Multiple Factors That Cause Decline and Reserve Factors That Compensate." *Neuron* 44, no. 1 (2004): 195-208.

Pierre-Paul Broca

Sabbatini, R.M.E. "A Brief Biography of Paul Pierre Broca: Mind, Brain, and Adaptation." www.serendip.brynmawr.edu, www.epub.org.br, (2000).

What we see when we open up the hood are changes

a) *The right hemisphere is "recruited"*

Tyler, L.K., *et al.* "Preserving Syntactic Processing across the Adult Life Span: The Modulation of the Frontotemporal Language System in the Context of Age-Related Atrophy." *Cereb Cortex* 20, no. 2 (2010): 352-64.

b) The prefrontal cortex is "recruited"

Davis, S.W., *et al.* "Age-Related Sensitivity to Task-Related Modulation of Language-Processing Networks." *Neuropsychologia* 63 (2014): 107-15.

c) Changes occur in the connectivity of the "normal system"

Meunier, D., *et al.* "Age-Related Functional Reorganization, Structural Changes, and Preserved Cognition." *Neurobiol Aging* 35, no. 1 (2014): 42-54.

Section Eight: The power of the new

Mikey commercial (facts and figures and YouTube)

"TV Guide: the 50 Greatest TV Commercials of All Time." *TV Guide*, News Corporation, July 3-9 1999

<https://www.youtube.com/watch?v=vYEXzx-TINc>

Sustained education good for cognition

Strauch, B. "How to Train the Aging Brain." *New York Times*, Dec. 29, 2009.

Productive engagement boosts episodic memory

Park, D.C., *et al.* "The Impact of Sustained Engagement on Cognitive Function in Older Adults: The Synapse Project." *Psychol Sci* 25, no. 1 (2014): 103-12.

<https://agingmind.utdallas.edu/learn-about-our-work/the-synapse-project/major-findings-publications-press/>

Teaching boosts cognition

Fiorella, L., and R. Mayer. "The Relative Benefits of Learning by Teaching and Teaching Expectancy." *Cont Educ Psych* 38, no. 4 (2013): 281-88.

Section Nine: Saints be praised

Pope John Paul various facts

https://en.wikipedia.org/wiki/Abbà_Pater

<http://www.npr.org/sections/deceptivecadence/2013/02/27/172718489/benedict-and-beethoven-the-outgoing-popes-musical-life>

<http://catholicexchange.com/the-many-languages-of-pope-john-paul-ii>

<https://www.skiinghistory.org/lives/john-paul-ii>

Effects of learning another language

Bak, T.H., *et al.* "Does Bilingualism Influence Cognitive Aging?". *Ann Neurol.* 2014 Jun;75(6):959-63 75, no. 6 (2014): 959-63.

Antoniou, M., *et al.* "Foreign Language Training as Cognitive Therapy for Age-Related Cognitive Decline: A Hypothesis for Future Research." *Neurosci Biobehav Rev* 37, no. 10 (2013): 2689-98.

Effects of music

Seinfeld, S., *et al.* "Effects of Music Learning and Piano Practice on Cognitive Function, Mood and Quality of Life in Older Adults." *Front Psychol* 4 (2013): 10.3389/fpsyg.2013.00810.

Association of reading with living longer

Bavishi, A., *et al.* "A Chapter a Day: Association of Book Reading with Longevity." *Soc Sci Med* 164 (2016): 44-48.

Section Ten: A private reserve

John Hetlinger

Worthington, D. "82-Year-Old Broomfield Resident Who Fixed the Hubble Telescope Sings Metal on "America's Got Talent"." *Denver Post*, June 8, 2016.

Definition and neurological characterization of cognitive reserve, quantitative boost

Antoniou, M., *et al.* "Foreign Language Training as Cognitive Therapy for Age-Related Cognitive Decline: A Hypothesis for Future Research." *Neurosci Biobehav Rev* 37, no. 10 (2013): 2689-98.

Hall, C.B., *et al.* "Cognitive Activities Delay Onset of Memory Decline in Persons Who Develop Dementia." *Neurology.* 73, no. 5 (2009): 356-61.

Cognitive reserve quote

Antoniou, M., *et al.* "Foreign Language Training as Cognitive Therapy for Age-Related Cognitive Decline: A Hypothesis for Future Research." *Neurosci Biobehav Rev* 37, no. 10 (2013): 2689-98.

Quote about "any age"

Tucker, A.M., and Y. Stern. "Cognitive Reserve in Aging." *Curr Alzheimer Res.* 84, no. 4 (2011): 354

CHAPTER FIVE – Your Mind

Section One

I Love Lucy clip, and episode rank

<https://www.youtube.com/watch?v=4AZK2-Tfc84>

"TV's Top 100 Episodes of All Time." *TV Guide* (June 15, 2009): 34-49.

Section Two: Noisy cocktail parties

Processing speed declines

Eckert, M.A. "Slowing Down: Age-Related Neurobiological Predictors of Processing Speed." *Front Neurosci* 5, no. 24-38 (2011).

Wahl, H.W., *et al.* "Is the Emergence of Functional Ability Decline in Early Old Age Related to Change in Speed of Cognitive Processing and Also to Change in Personality?". *J Aging Health* 22, no. 6 (2010): 691-712.

The stages of processing speed and U-shaped development

Kerchner, G.A., *et al.* "Cognitive Processing Speed in Older Adults: Relationship with White Matter Integrity." *PLoS One* 7, no. 11 (2012): e50425.

Kerchner, G.A. "What Causes the Brain to Have Slow Processing Speed, and How Can the Rate Be Improved?". *Scientific Amer Mind* 26, no. 2 (2014): 70.

Cerella, J., and S. Hale. "The Rise and Fall in Information-Processing Rates over the Life Span." *Acta Psychol* 86, no. 2-3 (1994): 109-97.

10 milliseconds and 100 milliseconds data

Braverman, E. "You're Getting Dumber as You Age: Here's How to Slow the Decline." *Atlantic Monthly* Feb 3, 2012 (2012).

Braverman, E. *Younger Brain, Sharper Mind: A 6-Step Plan for Preserving and Improving Memory and Attention at Any Age from America's Brain Doctor*. New York, New York: Rodale Books, 2012.

75% speedier

Howieson, D.B. "Cognitive Skills and the Aging Brain: What to Expect." *Cerebrum* PMC4938247 (2015).

Greatest predictor of future decline

Salthouse, T.A., and E. Ferrer-Caja. "What Needs to Be Explained to Account for Age-Related Effects on Multiple Cognitive Variables?". *Psychol Aging* 18, no. 1 (2003): 91-110.

Section Three: Nature, nurture, and speed

Frontal issues, cerebellar issues, white matter and processing speed

Kerchner, G.A., et al. "Cognitive Processing Speed in Older Adults: Relationship with White Matter Integrity." *PLoS One* 7, no. 11 (2012): e50425.

Oligodendrocyte erosion

Eckert, M.A. "Slowing Down: Age-Related Neurobiological Predictors of Processing Speed." *Front Neurosci* 5, no. 24-38 (2011).

Cerebellum and slowing process speed

Eckert, M.A., and et al. "Age-Related Changes in Processing Speed: Unique Contributions of Cerebellar and Prefrontal Cortex." *Front Hum Neurosci* 8, no. 4 (2010): 10.3389/neuro.09.010.2010.

Section Four: Intellectual hiccups

Ignoring distractions erodes with age – general comments

Landhuis, E. "The Distractible Aging Mind." *Scientific Amer Mind* 26, no. 2 (2015): 12.

Ignoring distractions erodes with age (task monitoring data, fig. 2, female)

Todorov, I., et al. "Age-Related Differences in Multiple Task Monitoring." *PloS One* doi/10.1371/journal.pone.0107619 (2014).

Event boundary (door way effect)

GA, Radvansky, et al. "Walking through Doorways Causes Forgetting:

Further Explorations.". *Q J Exp Psychol (Hove)*. 64, no. 8 (2011): 1632-45.

Radvansky quote (door way effect)

Pratt, K. "Why You Forget What You Were Doing When You Walk into a Room." <http://brainpages.org/why-you-forget-what-you-were-doing-when-you-walk-into-a-room/>.

Divided attention research

Glisky, E.L. "Changes in Cognitive Function in Human Aging." In *Brain Aging: Models, Methods and Mechanisms*, edited by D.R. Riddle. Boca Raton (FL): CRC Press/Taylor & Francis, 2007.

McDowd, J.M., and F.L. Craik. "Effects of Aging and Task Difficulty on Divided Attention Performance." *J Exp Psychol Hum Percept Perform* 14, no. 2 (1988): 267-80.

Driving and task-switching abilities

Howieson, D.B. "Cognitive Skills and the Aging Brain: What to Expect." *Cerebrum* PMC4938247 (2015).

Driving and processing speed

Edwards, J.D., and et al. "Ten Years Down the Road: Predictors of Driving Cessation." *Gerontologist* 50, no. 3 (2010): 393-99.

Recommendations from the National Institute on Aging

National Institute on Aging. "Health and Aging - Agepage: Older Drivers." <https://www.nia.nih.gov/health/publication/older-drivers>.

Section Five: Not-so-fluid intelligence

Wilhelm Wundt

"William Wundt Biography (1832-1920)." [faqs.org](http://www.faqs.org/health/bios/86/Wilhelm-Wundt.html), <http://www.faqs.org/health/bios/86/Wilhelm-Wundt.html>.

Decision-making, arousal and approach avoidance

Watson, D., et al. "The Two General Activation Systems of Affect: Structural Findings, Evolutionary Considerations, and Psychobiological Evidence." *Journal of Personality and Social Psychology* 76, no. 5 (1999): 820-38.

Definition of fluid intelligence (quote)

Samanez-Larkin, G.R., and B. Knutson. "Decision Making in the Ageing Brain: Changes in Affective and Motivational Circuits." *Nat Rev Neurosci* 16, no. 5 (2015): 278-89.

Working memory and fluid intelligence

Makin, S. "Memory Games." *Nature* 531 (2016): S10 – S11

Age-related losses of fluid intelligence (quant)

Kaufman, A.S., and J.L. Horn. "Age Changes on Tests of Fluid and Crystallized Ability for Women and Men on the Kaufman Adolescent and Adult Intelligence Test (Kait) at Ages 17-94 Years." *Arch Clin Neuropsychol* 11, no. 2 (1996): 97-121.

The Affect-Integration-Motivation framework proposal

Samanez-Larkin, G.R., and B. Knutson. "Decision Making in the Ageing Brain: Changes in Affective and Motivational Circuits." *Nat Rev Neurosci* 16, no. 5 (2015): 278-89.

Age-related neural changes in fluid intelligence, effects on AIM framework.

Kievit, R.A., et al. "Distinct Aspects of Frontal Lobe Structure Mediate Age-Related Differences in Fluid Intelligence and Multitasking." *Nat Commun* 10.1038/ncomms6658 (2014).

Choice bias (loss anticipation)

Samanez-Larkin, G.R., and B. Knutson. "Decision Making in the Ageing Brain: Changes in Affective and Motivational Circuits." *Nat Rev Neurosci* 16, no. 5 (2015): 278-89.

Positive and negative arousal neural substrates

Knutson, B., et al. "Inferring Affect from fMRI Data." *Trends Cogn Sci.* 18, no. 8 (2014): 422-28.

Role of fluid intelligence in new learning

Rui, M., et al. "Age Differences in Risky Choice: A Meta-Analysis." *Ann N Y Acad Sci* 1235 (2011): 18-29.

Close Encounters of the Third Kind scene

"Close Encounters Air Traffic Control Scene." (1977)
<https://www.youtube.com/watch?v=KW10xCub3Kg>.

Section Six: Brain games

FTC, Lumosity, and brain training programs

Federal Trade Commission, "Lumosity to Pay \$2 Million to Settle Ftc Deceptive Advertising Charges for Its "Brain Training" Program."
<https://www.ftc.gov/news-events/press-releases/2016/01/lumosity-pay-2-million-settle-ftc-deceptive-advertising-charges>. January 5, 2016

Federal Trade Commission, "Makers of Jungle Rangers Computer Game for Kids Settle FTC Charges that They Deceived Consumers with Baseless "Brain Training" Claims." <https://www.ftc.gov/news-events/press-releases/2015/01/makers-jungle-rangers-computer-game-kids-settle-ftc-charges-they>

Hensel, A. "Can Your Really Boost Your Brain With Games? The FTC Isn't So Sure." Inc. <https://www.inc.com/anna-hensel/after-ftc-crackdown-brain-training-companies-rethink-their-marketing-strategies.html>

Petition signed by skeptical scientists

Stanford Center on Longevity, "A Consensus on the Brain Training Industry from the Scientific Community."
<http://longevity3.stanford.edu/blog/2014/10/15/the-consensus-on-the-brain-training-industry-from-the-scientific-community/>. October 20, 2014

Contradicting scientific consensus

Koenig, R. "Do 'Brain Training' Games Work? It Depends on Which Scientists You Ask." *The Chronicle of Higher Education* December 17, 2014 (2014).

Positive quote that brain training works

Hurley, D. "The For-Real Science of Brain Training." *Scientific Amer Mind* 27 (2016): 68-65.

Section Seven: Speed demons

Far and near transfer effects

Makin, S. "Memory Games." *Nature* 531 (2016): S10 – S11

Dementia and videogames

Rebok, G.W., *et al.* "Ten-Year Effects of the Advanced Cognitive Training For Independent and Vital Elderly Cognitive Training Trial On Cognition and Everyday Functioning in Older Adult." *J. Amer Geriatrics Soc* 62 (2014): 16-24.

"Brain Training Reduces Dementia Risk Across 10 Years." American Psychological Association. (2016).
<http://www.apa.org/news/press/releases/2016/08/brain-training-dementia.aspx>

Auditory speed of processing result

Smith, G.E., *et al.* "A Cognitive Training Program Based on Principles of Brain Plasticity: Results from the Improvement in Memory with Plasticity-Based Adaptive Cognitive Training (Impact) Study." *J Am Geriatr Soc* 57, no. 4 (2009): 594-603.

Distractibility study (quant) Beeper Seeker game and quote

Mishra, J., *et al.* "Adaptive Training Diminishes Distractibility in Aging across Species." *Neuron* 84, no. 5 (2014): 1091-103.

Section Eight: From arcade to prefrontal cortex

NeuroRacer results and paper quote

Anguera, J.A., *et al.* "Video Game Training Enhances Cognitive Control in Older Adults." *Nature* 501 (2013): 97-101.

Gazzeley quote and skepticism

Hambrick, D.Z. "Brain Training Doesn't Make You Smarter." *Scientific Amer Mind* <https://www.scientificamerican.com/article/brain-training-doesn-t-make-you-smarter/> (2014).

CHAPTER SIX – Your Pathology

Section One

Alois Alzheimer's first patient (references therein)

Maurer, K., et al. "Auguste D and Alzheimer's Disease." *Lancet* 349 (1997): 1546-49.

Menigoz, A. "Pathologies of the CNS: The Sadly Famous Case of Alzheimer Disease."

<https://www.coursehero.com/file/19960028/Alzheimers-lecture-DrMenigozpdf/>

Section Two: Mild cognitive impairment

Symptoms of MCI

Staff, Mayo Clinic. "Mild Cognitive Impairment: Symptoms and Causes." Mayo Clinic, <http://www.mayoclinic.org/diseases-conditions/mild-cognitive-impairment/symptoms-causes/dxc-20206111>.

Causes and clinical evaluation of MCI

Langa, K.M., and D.A. Levine. "The Diagnosis and Management of Mild Cognitive Impairment: A Clinical Review." *JAMA* 312, no. 23 (2014): 2551-61.

Staff, Alzheimer's Association. "Mild Cognitive Impairment." <http://www.alz.org/dementia/mild-cognitive-impairment-mci.asp>.

Section Three: Robin Williams

Death and symptoms of Robin Williams

Allen, N. "Robin Williams' Widow Says He 'Only Had Three Years Left' after Parkinson's Diagnosis." *The Telegraph*, Nov 3, 2015.

Dementia with Lewy Bodies

Zupancic, M., et al. "Dementia with Lewy Bodies: Diagnosis and Management for Primary Care Providers." *Prim Care Companion CNS Disord* 13, no. 5 (2011): PCC.11r01190.

Parkinson's disease

Beitz, J.M. "Parkinson's Disease: A Review." *Front Biosci (Schol Ed)* 6 (2014): 65-74.

Frontotemporal dementia

J.D. Warren. "Frontotemporal Dementia." *BMJ* 347, no. f4827 (2013): PMC373533

Section Four: Alzheimer's disease: an overview

Confirmation that Alzheimer really studied Alzheimer

Muller, U., et al. "A Presenilin 1 Mutation in the First Case of Alzheimer's Disease." *Lancet Neurology* 12 (2013): 129-3

Various costs (facts and figures)

Dolgin, E. "How to Defeat Dementia." *Nature* 539 (2016): 156-58.

Alzheimer's Association. "2016 Alzheimer's Disease Facts and Figures." [http://www.alz.org/ri/documents/facts2016_report\(3\).pdf](http://www.alz.org/ri/documents/facts2016_report(3).pdf).

Malakoff, D., and J. Mervis. "Science Lessons for the Next President: Brain Health Should Be Top of Mind." *Science* DOI: 10.1126/science.aal0283 (2016).

Controversies about what AD actually is

Morris, G.P., et al. "Inconsistencies and Controversies Surrounding the Amyloid Hypothesis of Alzheimer's Disease." *Acta Neuropathol Commun* 2 (2014): 135 - 56.

No single test can diagnose AD

University of Iowa Hospitals Healthcare and Clinics. University of Iowa Healthcare <https://www.uihealthcare.org/ADAM/Neurology%20Center/33/000005.htm>.

Alzheimer's Association. "Diagnosis of Alzheimer's Disease and Dementia." http://www.alz.org/alzheimers_disease_diagnosis.asp

Section Five: Alzheimer's disease: warning signs

Alzheimer's Association 10 signs

Alzheimer's Association. <http://www.alz.org/10-signs-symptoms-alzheimers-dementia.asp>.

Supporting peer review for the 10 signs approach

Raina, S. Kumar, and V. Chander. "To Evaluate the Utility of 10 Warning Signs Questionnaire in Assessment of Cognitive Function among Elderly People." *J Neurosci Rural Practv* 7, no. PMC4750323 (2016).

Leifer, B.P. "Alzheimer's Disease: Seeing the Signs Early." *J Am Acad Nurse Pract* 21, no. 11 (2009): 588-95.

Section Six: Lessons from a president

Ronald Reagan's farewell letter

Reagan, The American Experience. "Primary Resources: Alzheimer's Letter." <http://www.pbs.org/wgbh/americanexperience/features/primary-resources/reagan-alzheimers/>.

Various facts and figures of AD

Alzheimer's Association. "2016 Alzheimer's Disease Facts and Figures." <http://www.alz.org/facts/>. (2016)

Disease progression

Bird, T. D. "Alzheimer Disease Overview." *GeneReviews* <https://www.ncbi.nlm.nih.gov/books/NBK1161/> (2015).

AD is cumulative

Grant, J.L., *et al* . "Reversal of Paralysis and Reduced Inflammation from Peripheral Administration of Amyloid-B in Th1- and Th17-Versions of Experimental Autoimmune Encephalomyelitis." *Sci Transl Med* 4, no. 145 (2012): 145ra05.

AD Stages

National Institute on Aging. "Alzheimer's Disease Fact Sheet. Disease Education and Referral Center: Health and Aging." <https://www.nia.nih.gov/alzheimers>.

Inevitability quote

Alzheimer's Association. "Factsheet, July 2016."
http://act.alz.org/site/DocServer/2012_6th_Cause_Fact_Sheet.pdf?docID=7149 (2016).

Section Seven: The amyloid hypothesis

Castellano's death

Lubasch, A.H. "Shot by Shot, an Ex-Aide to Gotti Describes the Killing of Castellano." *New York Times*, March 4, 1992.

The amyloid hypothesis and the molecular biology of amyloid and tau

Riek, R., and D.S. Eisenberg. "The Activities of Amyloids from a Structural Perspective." *Nature* 539 (2016): 227-35.

Bloom, G.S. "Amyloid- β and Tau: The Trigger and Bullet in Alzheimer Disease Pathogenesis." *JAMA Neurol* 7, no. 4: 505-08.

Canter, R.G., *et al.* "The Road to Restoring Neural Circuits for the Treatment of Alzheimer's Disease." *Nature* 539 (2016): 187-96.

Section Eight: The Nun Study

Sister Mary and AD pathology

Snowdon, D. A. "Aging and Alzheimer's Disease: Lessons from the Nun Study." *Gerontologist* 37, no. 2 (1997): 150-5

The Nun Study

Snowdon, D.A., *et al.* "Healthy Aging and Dementia: Findings from the Nun Study." *Ann Intern Med* 139, no. 5 Pt 2 (2003): 450-54.

Ambiguity of Amyloid and Alzheimer's (30% figures)

Underwood, E. "Tau Protein—Not Amyloid—May Be Key Driver of Alzheimer's Symptoms." <http://www.sciencemag.org/news/2016/05/tau-protein-not-amyloid-may-be-key-driver-alzheimer-s-symptoms>.

Fagan, T. "When There's No Amyloid, It's Not Alzheimer's." Alzforum, <http://www.alzforum.org/news/research-news/when-theres-no-amyloid-its-not-alzheimers>.

Failure of solanezumab (and quotes therein)

Abbott, Al., and E. Dolgin. "Failed Alzheimer's Trial Does Not Kill Leading Theory of Disease." *Nature* 540 (2016): 15-16.

Lotfus, P. "Eli Lilly Alzheimer's Drug Fails Trail." *Wall Street Journal*. (2016). <https://www.wsj.com/articles/eli-lillys-alzheimers-drug-trial-fails-to-achieve-goals-1479902563>

Alternate explanations for AD origins

Morris, G.P., et al. "Inconsistencies and Controversies Surrounding the Amyloid Hypothesis of Alzheimer's Disease." *Acta Neuropathol Commun* 2 (2014): 135 - 56.

Section Nine: Predicting Alzheimer's in your twenties

Linguistic ability, AD and quote (quote from second paper)

"Snowdon's Nun Study." IB Psychology, <http://www.thinkib.net/psychology/blog/12565/snowdons-nun-study>.

Snowdon, D.A., et al. "Linguistic Ability in Early Life and Cognitive Function and Alzheimer's Disease in Late Life. Findings from the Nun Study." *JAMA* 275, no. 7 (1996): 528-32.

Pittsburgh Compound-B.

Cohen, A.D., and W.E. Klunk. "Early Detection of Alzheimer's Disease Using PiB and FDG PET." *Neurobiol Dis* 72, no. Pt A (2014): 177-22.

Colombian study, early onset and predictability

Lalli, M.A. et al "Origin of the PSEN1 E280a Mutation Causing Early-Onset Alzheimer's Disease." *Alzheimers Dement* 10 (2014): S277-S83.

Stahl, L. "The Alzheimer's Laboratory." CBS News, <http://www.cbsnews.com/news/60-minutes-alzheimers-disease-medellin-colombia-lesley-stahl/>.

Alzheimer's Prevention Initiative

Reiman, E.M., et al. "Alzheimer's Prevention Initiative: A Plan to Accelerate the Evaluation of Presymptomatic Treatments." *J Alzheimers Dis*. 26, no. Suppl 3 (2011): 321-29.

Neurolinguistic changes in Colombian cohort

Arango-Lasprilla, J.C., *et al.* "Cognitive Changes in the Preclinical Phase of Familial Alzheimer's Disease.". *J Clin Exp Neuropsychol* 29, no. 8 (2007): 892-900.

CHAPTER SEVEN – Your Food and Exercise

Section One

Henry Heimlich story

Grasha, K., and B. Tweh. "At 96, Heimlich Performs His Own Maneuver." USA Today Network (2016)
<http://www.cincinnati.com/story/news/2016/05/26/henry-heimlich-finally-uses-famed-maneuver/85003350/>.

Section Two: Calm, cool, collected

President Obama and Executive Function

SuchlsLifeVideos. "President Obama Roasts Donald Trump At White House Correspondents' Dinner!" (2011).
<https://www.youtube.com/watch?v=k8TwRmX6zs4>

Shear, Michael D. "Obama and Gates Gave No Hint of Raid at Correspondants' Dinner." (2011).
<https://thecaucus.blogs.nytimes.com/2011/05/02/obama-and-gates-gave-no-hint-of-raid-at-correspondents-dinner/>

Development of EF throughout childhood

"InBrief: Executive Function." *Center on the Developing Child, Harvard University*. 2012. <http://developingchild.harvard.edu/resources/inbrief-executive-function/>

Blair, C. "Developmental Science and Executive Function." *Curr Dir Psychol Sc* 25, no. 1 (2016): 3-7.

Section Three: Cracks, leaks, and potholes

Seattle City Census

Assefa, S. "Seattle's Population and Demographics." City of Seattle, <http://www.seattle.gov/dpd/cityplanning/populationdemographics/>.

Executive function naturally declines with old age

Kirova, A., et al. "Working Memory and Executive Function Decline across Normal Aging, Mild Cognitive Impairment, and Alzheimer's Disease." *BioMed Research International* Article ID 748212 (2015).

Connectivity degeneration and the 82% figure

Fjell, A.M., and et al. "The Disconnected Brain and Executive Function Decline in Aging." *Cereb Cortex*. doi: 10.1093/cercor/bhw082 (2016).

Prefrontal cortex and hippocampal shrinkage

Stephens, J.A., and M.E. Berryhill. "Older Adults Improve on Everyday Tasks after Working Memory Training and Neurostimulation." *Brain Stimul* 9, no. 4 (2016): 553-59.

Section Four: Get your brain off the couch

Norman Lear

"Norman Lear." IMDb. <http://www.imdb.com/name/nm0005131/>

"Not My Job: How Much Does Producer Norman Lear Know About Learjets?" NPR, (2016). <http://www.npr.org/2016/07/02/484009777/not-my-job-how-much-does-producer-norman-lear-know-about-learjets>

"Oz Five: Norman Lear." The Doctor Oz Show, (2014). http://www.doctoroz.com/episode/paleo-solution-pain?video_id=3938750087001

Exercise changes the areas involved in executive function

Colcombe, S., and A.F. Kramer. "Fitness Effects on the Cognitive Function of Older Adults: A Meta-Analytic Study." *Psych Sci* 14, no. 2 (2003): 125-30.

Exercise changes executive function in elderly populations

Gajewski, P.D., and M. Falkenstein. "Physical Activity and Neurocognitive Functioning in Aging - a Condensed Updated Review." *Eur Rev Aging Phys Act* 13, no. 1 (2016): 10.1186/s11556-016-0161-3.

Associative findings (effect size data on fig. 1)

Colcombe, S., and A.F. Kramer. "Fitness Effects on the Cognitive Function of Older Adults: A Meta-Analytic Study." *Psych Sci* 14, no. 2 (2003): 125-30.

Causal findings (fig. 1 and Table 3)

Albinet, C.T., et al. "Increased Heart Rate Variability and Executive Performance after Aerobic Training in the Elderly." *Eur J Appl Physiol*. 2010 Jul;109(4):617-24 109, no. 4 (2010): 617-24.

Benefit 25 years later

Chang, M., and et al. "The Effect of Midlife Physical Activity on Cognitive Function among Older Adults: Ages--Reykjavik Study." *J Gerontol A Biol Sci Med Sci*. 65, no. 12 (2010): 1369-74.

Frank Hu quote

Shaw, J. "The Deadliest Sin: From Survival of the Fittest to Staying Fit Just to Survive: Scientists Probe the Benefits of Exercise -- and the Dangers of Sloth." *Harvard Magazine*, <http://harvardmagazine.com/2004/03/the-power-of-exercise>.

Focusing behavior unaffected by exercise

Landuis, E. "The Distractible Aging Mind." *Scientific American Mind* 26, no. 2 (2015): 12.

Working memory results more ambiguous

Desjardins-Crépeau, L., and et al. "Physical Functioning Is Associated with Processing Speed and Executive Functions in Community-Dwelling Older Adults." *J Gerontol B Psychol Sci Soc Sci*. 69, no. 6 (2014): 837-44.

Section Five: Bulking up your neural tissue

Exercise alters volume in the PFC

Voelcker-Rehage, C., and C. Niemann. "Structural and Functional Brain Changes Related to Different Types of Physical Activity across the Life Span." *Neurosci Biobehav Rev* 37, no. 9 Pt B (2013): 2268-2295.

Exercise alters volume in PFC: particularly in the dlPFC

Gordon, B.A., et al. "Neuroanatomical Correlates of Aging, Cardiopulmonary Fitness Level, and Education." *Psychophysiology* 45, no. 5 (2008): 825-38.

Exercise alters volume in the hippocampus (2% figure)

Erickson, K.I., *et al.* "Exercise Training Increases Size of Hippocampus and Improves Memory." *PNAS*. 2011 108, no. 7 (2011): 3017-22.

Exercise alters connectivity

Voss, M.W., *et al.* "Plasticity of Brain Networks in a Randomized Intervention Trial of Exercise Training in Older Adults." *Front Aging Neurosci* doi: 10.3389/fnagi.2010.00032 (2010).

Exercise increases gray matter volume by 8%

Thomas, A.G., *et al.* "The Effects of Aerobic Activity on Brain Structure." *Front Psychol*. doi: 10.3389/fpsyg.2012.00086. (2012).

Effects of exercise on gray matter last a long time (9 years); reduced risk for dementia

Erickson, K.I., *et al.* "Physical Activity Predicts Gray Matter Volume in Late Adulthood: The Cardiovascular Health Study." *Neurology* 75, no. 16 (2010): 1415-22.

Effects of exercise on BDNF

Erickson, K.I., *et al.* "The Aging Hippocampus: Interactions between Exercise, Depression and BDNF." *Neuroscientist* 18 (2012): 82-97.

Effects of exercise on cerebral blood volume

Schmidt, W., *et al.* "Train the Vessel, Gain the Brain: Physical Activity and Vessel Function and the Impact on Stroke Prevention and Outcome in Cerebrovascular Disease." *Cerebrovasc* 35, no. 4: 303-12.

Molecular basis of angiogenesis

Tang, Kechun, *et al.* "Exercise-Induced VEGF Transcriptional Activation in Brain, Lung and Skeletal Muscle." *Respir Physiol Neurobiol* 170, no. 1 (2010): 16-22.

Pirates of the Caribbean: At World's End

Pirates of the Caribbean: At World's End, Gore Verbinski (2007, USA: Walt Disney Pictures). Film.

Section Six: A little exercise goes a long way

Minimum amount to achieve cognitive benefit

Colcombe, S., and A.F. Kramer. "Fitness Effects on the Cognitive Function of Older Adults: A Meta-Analytic Study." *Psych Sci* 14, no. 2 (2003): 125-30.

The benefits are dose dependent

Lautenschlager, N.T., and O.P. Almeida. "Physical Activity and Cognition in Old Age." *Curr Opin Psychiatry* 19, no. 2 (2006): 190-93.

Longitudinal 72 blocks (and starting younger)

Erickson, K.I., *et al.* "Physical Activity Predicts Gray Matter Volume in Late Adulthood: The Cardiovascular Health Study." *Neurology* 75, no. 16 (2010): 1415-22.

Resistance training data

Liu-Ambrose, T., *et al.* "Resistance Training and Functional Plasticity of the Aging Brain: A 12-Month Randomized Controlled Trial." *Neurobiol Aging* 33, no. 8 (2012): 1690-198.

Adding 104 minutes of mobility

Pahor, M., *et al.* "Effect of Structured Physical Activity on Prevention of Major Mobility Disability in Older Adults: The Life Study Randomized Clinical Trial." *JAMA*. 311, no. 23 (2014): 2387-96.

Fidgeting (Incidental Physical Activity)

McGuire, K.A., and R. Ross. "Incidental Physical Activity Is Positively Associated with Cardiorespiratory Fitness." *Med Sci Sports Exerc* 43, no. 11 (2011): 2189-94.

Minimal environmental movement, largest life spaces and Alzheimer's risk

Bennett, D.A. "Banking against Alzheimer's." *Sci Am Mind* 27, no. 4 (2016): 29-37.

Different types of exercise may produce different cognitive effects

Voelcker-Rehage, C., and C. Niemann. "Structural and Functional Brain Changes Related to Different Types of Physical Activity across the Life Span." *Neurosci Biobehav Rev* 37, no. 9 Pt B (2013): 2268-2295.

Voelcker-Rehage, C., *et al.* "Cardiovascular and Coordination Training Differentially Improve Cognitive Performance and Neural Processing in Older Adults." *Front Hum Neurosci*. doi:10.3389/fnhum.2011.00026 (2011).

Section Seven: Cheese lovers, beware the bedsheets!

Association does not mean causation

Vigen, Tyler. "Spurious Correlations." <http://tylervigen.com/spurious-correlations>.

Skepticism about nutrition research

Spector, R. "Science and Pseudoscience in Adult Nutrition Research and Practice." *Skeptical Inquirer* 33, no. 3 (2009): http://www.csicop.org/si/show/science_and_pseudoscience_in_adult_nutrition_research_and_practice.

Carroll, A.E. "The Upshot: Unexpected Honey Study Shows Woes of Nutrition Research." *New York Times*, (2015). http://www.nytimes.com/2015/10/27/upshot/surprising-honey-study-shows-woes-of-nutrition-research.html?_r=0

Section Eight: Free radicals in a hungry brain

2% of the body weight, 20% of the calories

Raichle, M.E., and D.A. Gusnard. "Appraising the Brain's Energy Budget." *PNAS* 6, no. 99 (2002): 10237-39.

Brain metabolizes glucose, not fat

McKinley, R.A., and et al. "Human Information Processing in the Dynamic Environment." *Air Force Research Laboratory AFRL-RH-WP-TR-2008-0008* (2008): 1 - 3.

Molecular repair processes begin to fail during aging (slide quotes fig. 2)

Stranahan, A.M., and M.P. Mattson. "Recruiting Adaptive Cellular Stress Responses for Successful Brain Ageing." *Nat Rev Neurosci* 13, no. 3 (2012): 209-16.

Interactive roles of oxidative stress and anti-oxidants

Pisoschi, A. M., and A. Pop. "The Role of Antioxidants in the Chemistry of Oxidative Stress: A Review." *European Journal of Medicinal Chemistry* 97 (2015): 55-74.

Section Nine: Less is more—maybe

50% extension of life in lab animals

Speakman, J.R., and S.E. Mitchell. "Caloric Restriction." *Mol Aspects Med.* 32, no. 3 (2011): 159-221.

Life extension in other animals (including fruit flies)

S.D. Katewa *et al.* "Peripheral Circadian Clocks Mediate Dietary Restriction-Dependent Changes in Lifespan and Fat Metabolism in *Drosophila*." *Cell Metab* 23, no. 1 (2016): 143-54.

Human research (bio and behavioral marker work)

Martin, C.K., *et al.* "Effect of Calorie Restriction on Mood, Quality of Life, Sleep, and Sexual Function in Healthy Nonobese Adults." *JAMA Internal Medicine* 176, no. 6 (2016): 743-52.

Section Ten: Are you nuts?

Original Mediterranean research diet

Estruch, R., *et al.* "Primary Prevention of Cardiovascular Disease with a Mediterranean Diet." *N Engl J Med* 2013 368 (2013): 1279-90.

Mediterranean research diet – living longer (reduction in mortality)

Guasch-Ferré, M., *et al.* "Olive Oil Intake and Risk of Cardiovascular Disease and Mortality in the PREDIMED Study." *BMC Med.* DOI: 10.1186/1741-7015-12-78 (2014).

Effects of Mediterranean diet on cognition (Graph, fig. 2)

Valis-Pedrit, C., *et al.* "Mediterranean Diet and Age-Related Cognitive Decline: A Randomized Clinical Trial." *JAMA Internal Medicine* 175, no. 7 (2015): 1094-103.

David Bennet quote

Bennett, D.A. "Banking against Alzheimer's." *Sci Am Mind* 27, no. 4 (2016): 29-37.

Mediterranean, MIND and DASH diets

"Mediterranean Diet," *U.S. News*, <http://health.usnews.com/best-diet/mediterranean-diet>.

"MIND Diet," *U.S. News*, <http://health.usnews.com/best-diet/mind-diet>.

"DASH Diet," *U.S. News*, <http://health.usnews.com/best-diet/dash-diet>.

Michael Pollan Quote

DeNoon, Daniel. "7 Rules for Eating," *Webmd*, <http://www.webmd.com/food-recipes/news/20090323/7-rules-for-eating#1>

Section Eleven: No pain, no gain

Hormesis review

Calabrese, E.J., *et al.* "Biological Stress Response Terminology: Integrating the Concepts of Adaptive Response and Preconditioning Stress within a Hormetic Dose-Response Framework." *Toxicol Appl Pharmacol* 222 (2007): 122-28.

Calorie restriction works through hormesis

D. Hyun *et al* "Calorie Restriction up-Regulates the Plasma Membrane Redox System in Brain Cells and Suppresses Oxidative Stress During Ageing." *PNAS* 103 (2006): 19908-12.

Arumugam, T.V., *et al.* "Age and Energy Intake Interact to Modify Cell Stress Pathways and Stroke Outcome." *Ann. Neurol.* 67 (2010): 42-52.

Phytochemicals work through hormesis

Son, T.G. *et al* "Hormetic Dietary Phytochemicals." *Neuromolec Med* 10 (2008): 236-46.

Mediterranean effects on connectivity

Pelletier, A., and *et al.* "Mediterranean Diet and Preserved Brain Structural Connectivity in Older Subjects." *Alzheimers Dement* 11, no. 9 (2015): 1023-31.

Anti-oxidants taken as individual supplements don't work.

Bjelakovic, G., *et al.* "Antioxidant Supplements for Prevention of Mortality in Healthy Participants and Patients with Various Diseases. ." *Cochrane Database of Systematic Reviews* 2, Article CD007176, no. Article CD007176 (2013).

CHAPTER EIGHT – Your Sleep

Section One

Susannah Mushatt Jones

Lewis, D. "Brooklyn's Susannah Mushatt Jones, the World's Oldest Person at 115, Thanks Sleep for Long Life." *New York Daily News*, <http://www.nydailynews.com/new-york/sleep-world-oldest-person-secret-longevity-article-1.2266141>.

Waxman, Olivia B. "Long-Life Secrets From An (Almost) 115 Year Old Woman." *Time*, 2014. <http://time.com/2873247/second-oldest-american-115-birthday/>

Section Two: Night owls and early birds

Basic sleep biology

Weber, F., and Y. Dan. "Circuit-Based Interrogation of Sleep Control." *Nature* 538 (2016): 51-59.

Webb, W.B. "Individual Differences in Sleep Length." *Int Psych Clin* 7, no. 44-47 (1970).

"What Is "Normal" Sleep?". *U.S. National Library of Medicine* <https://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0072506/>. (2016)

Passer, M.W., and R.E. Smith. *Sleep and dreaming: stages of sleep Psychology: Frontiers and Applications*. New York: McGraw-Hill, 2001. pg. 183-184

Walker, M. P. "The Role of Slow Wave Sleep in Memory Processing." *J Clin Sleep Med* 5, no. 2 Suppl (2009): S20-S26.

Welberg, L. "Sleep: Not Such a Waste." *Nat Rev Neurosci* 14, no. 12 (2013): 16-17.

Estimates about much sleep we need (lifespan, including British septugenarian)

Passer, M.W., and R.E. Smith. *Psychology: Frontiers and Applications*. New York: McGraw-Hill, 2001. pg. 186

O.J. Walch "Get an Early Night." *Nature* 533 (2016): 151

Section Three: Catching the wave

Opponent Process Theory

Foster, R.G., and L. Kreitzman. *Rhythms of Life: The Biological Clocks That Control the Daily Lives of Every Living Thing*. Profile Books (London)
p. 177 - 200

Section Four: We sleep to learn (breakthrough one)

Bioenergetics and the incongruities of sleep

Barras, C. "What Is the Real Reason We Sleep?". *BBC.com*
<http://www.bbc.com/earth/story/20160317-what-is-the-real-reason-we-sleep> (2016).

Why we sleep – memory consolidation

Walker, M. P. "The Role of Slow Wave Sleep in Memory Processing." *J Clin Sleep Med* 5, no. 2 Suppl (2009): S20-S26.

Stickgold, R. "Sleep on It!". *Scientific American* 313 (2015): 52-57

Section Five: Slow-acting acid

Videotape degradation over time

Bogart, J.W.C. Van. "Appendix 2: Estimation of Magnetic Tape Life Expectancies." In *Magnetic Tape Storage and Handling a Guide for Libraries and Archives*. Washington, D.C.: The Commission on Preservation and Access, 1995.

Specific changes in REM, SWS

Scullin, M.K., and D.L. Bliwise. "Sleep, Cognition, and Normal Aging: Integrating a Half Century of Multidisciplinary Research.". *Perspect Psychol Sci* 10, no. 1 (2015): 97-137.

Section Six: The grip of a tiny clock

Atomic clocks

Mann, A. "How the U.S. Built the World's Most Ridiculously Accurate Atomic Clock." *Wired*, April 4, 2014. <https://www.wired.com/2014/04/nist-atomic-clock/>

Glass, D. "What Happens If GPS Fails?" *The Atlantic*, June 13, 2016. <http://www.theatlantic.com/technology/archive/2016/06/what-happens-if-gps-fails/486824/>

Role of the suprachiasmatic nucleus

Nakamura, T.J., et al. "The Suprachiasmatic Nucleus: Age-Related Decline in Biological Rhythms." *J Physiol Sci* 66, no. 5 (2016): 367-74.

Section Seven: Losing our rhythm

How sleep changes with age

Kondratova, A.A., and R.V. Kondratov. "The Circadian Clock and Pathology of the Ageing Brain." *Nat Rev Neurosci* 13, no. 5 (2012): 325-35.

Sleep Cognition Hypothesis

Beullens, J. "Sleep and Intellectual Functioning in the Elderly: The Role of Sleep Quality and Apnea--Literature Survey." *Tijdschr Gerontol Geriatr* 32, no. 4 (2001): 165-73.

Old age, Memory and Executive Function

S.M. Fogel et al "fMRI and sleep correlates of the age-related impairment in motor memory consolidation." *Human Brain Mapping* 35, no. 8 (2014): 3625-3645

Section Eight: An early start

Joseph and Pharaoh

Gen. 41:1-40 NIV

Quote about starting healthy sleep hygiene early

Scullin, M.K., and D.L. Bliwise. "Sleep, Cognition, and Normal Aging:

Integrating a Half Century of Multidisciplinary Research." *Perspect Psychol Sci* 10, no. 1 (2015): 97-137.

Section Nine: We sleep to sweep (breakthrough two)

Why we sleep – toxic waste removal

Welberg, L. "Sleep: Not Such a Waste." *Nat Rev Neurosci* 14, no. 12 (2013): 16-17.

Glymphatics, toxic waste removal and sleep

Thiyagaragan, M. A. *et al* "Glymphatic Distribution of Csf-Derived Apoe into Brain Is Isoform Specific and Suppressed During Sleep Deprivation." *Mol Neurodegener* 11, no. 74-94 (2016).

Section Ten: When toxic waste builds up

Garbage strike

"The Garbage Strike of 1911."
<http://stuffnobodycaresabout.com/2013/08/21/old-new-york-in-photos-31/>.

Alzheimer's disease

Lucey, B. P., and D.M. Holtzman. "How Amyloid, Sleep and Memory Connect." *Nat Neurosci* 18, no. 7 (2015): 933-34.

Tarasoff-Conway, J. M. *et al* "Clearance Systems in the Brain-Implications for Alzheimer Disease." *Nat Rev Neurol* 11, no. 8 (2015): 457-70.

Role of clearance systems in neurodegeneration

Musiek, E.S., and D.M. Holtzman. "Mechanisms Linking Circadian Clocks, Sleep, and Neurodegeneration." *Science* 25 (2016): 1005-08.

Section Eleven: The bedtime story that's just right

Goldilocks story

Goldilocks and the Three Bears "Fractured Fairy Tales."
https://www.youtube.com/watch?v=69CXU_KOah4.

The optimum amount of sleep you need

Hublin, C., *et al.* "Sleep and Mortality: A Population-Based 22-Year Follow-up Study". *Sleep* 30, no. 10 (2007): 1245-53.

Shen, X., *et al.* "Nighttime Sleep Duration, 24-Hour Sleep Duration and Risk of All-Cause Mortality among Adults: A Meta-Analysis of Prospective Cohort Studies." *Sci Rep.* 6 (2016): 21480. doi: 10.1038/srep80.

Sleep difficulties: links to mental health

Leblanc, M., *et al.* "Sleep Problems in Anxious and Depressive Older Adults." *Psychol Res Behav Manag* 8 (2015): 161-69.

Section Twelve: How to bet better sleep

Dr. Peter Hauri

Hauri, P., and S. Linde. *No More Sleepless Nights.* New York: Wiley, 1996.

"Conversations with Our Founders: Peter Hauri, PhD."
Sleep Research Society,
<http://www.sleepresearchsociety.org/conversationwithfounders.aspx>.

Suggestions for sleep hygiene from the Mayo Clinic

Dorfner, M. "Sandman Not Doing the Job? Use These Behavioral Strategies for Sleep Difficulties." Mayo Clinic, (2015)
<http://newsnetwork.mayoclinic.org/discussion/sandman-not-doing-the-job-use-these-behavioral-strategies-for-sleep-difficulties/>.

Torborg, L. "Mayo Clinic Q and A: Ongoing Insomnia? Variety of Factors Could Be at Play." <http://newsnetwork.mayoclinic.org/discussion/mayo-clinic-q-a-ongoing-insomnia-variety-of-factors-could-be-at-play/>.

Protocol for elderly insomniacs

Buysse, D.J., *et al.* "Efficacy of Brief Behavioral Treatment for Chronic Insomnia in Older Adults." *Arch Intern Med* 171, no. 19 (2011): 887-95.

Span, P. "Simple Rules for Better Sleep." *New York Times*, 2011.

Sleep sedative effects

Glass, J. "Sedative Hypnotics in Older People with Insomnia: Meta-Analysis of Risks and Benefits." *BMJ* 331, no. 7526 (2005): 1169.

CHAPTER NINE – Your Longevity

Section One

Connell, M. O'. "The Immortality Campaign." *New York Times Magazine*, February 12, 2017.

Various British Longitudinal Studies

Step toe, A. "Tracing the Social Roots of Health." *Nature* 531 (2016): 32-33.

Super Agers

Rogalski, E.J., *et al.* "Youthful Memory Capacity in Old Brains: Anatomic and Genetic Clues from the Northwestern Superaging Project." *J Cogn Neurosci* 25, no. 1 (2013): 29-36.

Scottish study

Underwood, E. "Starting Young." *Science* 346 (2014): 568-71.

Genetic studies

Wheeler, H. E., and S. K. Kim. "Genetics and Genomics of Human Ageing." *Philos Trans R Soc Lond B Biol Sci* 366, no. 1561 (2011): 43-50

Melzer, D., *et al.* "Genetic Variation and Human Aging: Progress and Prospects." *J Gerontol A Biol Sci Med Sci* 6, no. 3 (2007): 301-07.

Section Two: The Holy Grail of Indy genes

Indy Gene

Highfield, Roger. "Indy' Gene May Be Holy Grail For Longevity." *The Telegraph*. <http://www.telegraph.co.uk/news/science/science-news/4757682/Indy-gene-may-be-Holy-Grail-for-longevity.html>. (December 21, 2000).

Fruit flies and Michael Rose data

Nusbaum, T.J., and M.R. Rose. "Aging in *Drosophila*." *Comp. Biochem. Physiol.* 109a, no. 1 (1994): 33-38.

Mice and longevity

Bartke, A., *et al.* "Links between Growth Hormone and Aging." *Endokrynol Pol* 64, no. 1 (2013): 46-52.

Pilcher, Helen R. "Money for Old Mice." *Nature*, (2003).
<http://www.nature.com/news/2003/030915/full/news030915-13.html>

Roundworms and longevity

Ayyadevara, S., *et al.* "Remarkable Longevity and Stress Resistance of Nematode Pi3k-Null Mutants." *Aging Cell* 7, no. 1 (2008): 13-22.

Section Three: The cells of Henrietta Lacks

Henrietta's bio

Zielinski, S. "Cracking the Code of the Human Genome." *Smithsonian*
<http://www.smithsonianmag.com/science-nature/henrietta-lacks-immortal-cells-6421299/> (2010).

HeLa Cell controversy

Callaway, E. "Deal Done over HeLa Cell Line." *Nature* 500 (2013): 132-33.

Cancer and the process of immortalization

Masters, J.R. "Human Cancer Cell Lines: Fact and Fantasy." *Nature Review Molecular Cell Biology* 1 (2000): 233-36.

Section Four: Counting tips

The Hayflick Limit

Shay, J.W., and W.E. Wright. "Hayflick, His Limit, and Cellular Ageing." *Nature Reviews Molecular Cell Biology* 1 (2000): 72-76.

Section Five: Help is on the way, sort of

Basic biology of telomeres

Blackburn, E.H., *et al.* "Human Telomere Biology: A Contributory and Interactive Factor in Aging, Disease Risks, and Protection." *Science* 350 (2015): 1193-9

Blackburn, E.H. "Telomeres, Telomerase and Cancer." *Scientific American* 301, no. 4 (2009):
<https://www.scientificamerican.com/article/telomeres-telomerase-and/>.

Section Six: The rise and fall of longevity genes

Gibbon bio and works

Gibbon, Edward. "Decline & Fall of the Roman Empire." http://www.age-of-the-sage.org/history/historian/Edward_Gibbon.html.

Sirtuin story

Bonkowski, M.S., and D.A. Sinclair. "Slowing Ageing by Design: The Rise of Nad⁺ and Sirtuin-Activating Compounds." *Nature Review Molecular Cell Biology* 17, no. 11 (2016): 679-90.

IGF-1 story

Milman, S., *et al.* "Low Insulin-Like Growth Factor-1 Level Predicts Survival in Humans with Exceptional Longevity." *Aging Cell* 13, no. 4 (2014): 769-71.

mTOR story and rapamycin

Longo, V.D., *et al.* "Interventions to Slow Aging in Humans: Are We Ready?". *Aging Cell*. 14, no. 4 (2015): 497-510.

Section Seven: A pill for aging?

History of anti-aging pharmacological reagents

Fabry, M. "A Cure for the Ages." *Time* 189, no. 7 (2017): 86-87.

Metformin story

Hall, S.S. "A Trial for the Ages." *Science* 349 (349): 1275-7

Montelukast story

Marschallinger, J., *et al.* "Structural and Functional Rejuvenation of the Aged Brain by an Approved Anti-Asthmatic Drug." *Nat Commun* 6, no. 8466-8482 (2015).

Basis and NAD

Verdin, E. "NAD⁺ in Aging, Metabolism, and Neurodegeneration." *Science* 350 (2015): 1208-13.

Zhang, S. "The Weird Business Behind a Trendy "Anti-Aging" Pill." *Wired*, July, 6, 2016, <https://www.wired.com/2016/07/confused-elysiums-anti-aging-drug-yeah-fda/>.

Section Eight: Blood brothers

History of parabiosis

Fabry, M. "A Cure for the Ages." *Time* 189, no. 7 (2017): 86-87.

The mechanics of parabiosis

Scudellari, M. "Ageing Research: Blood to Blood." *Nature* 517 (2015): 426-29.

The Wyss-Coray findings

Villeda, S.A., *et al.* "Young Blood Reverses Age-Related Impairments in Cognitive Function and Synaptic Plasticity in Mice ". *Nature Medicine* 20 (2014): 659-63.

The clinical trial

McGilvray, A. "Ageing: Restoration Project." *Nature* 531, no. S4-S5 (2016).

Controversies about the clinical trial

Kaiser, J. "Young Blood Antiaging Trial Raises Questions." *Science* (2016): <http://www.sciencemag.org/news/2016/08/young-blood-antiaging-trial-raises-questions>.

CHAPTER TEN – Your Retirement

Section One

"Cocoon." Director, Ron Howard. <http://www.imdb.com/title/tt0088933/>.

Section Two: The worst thing you can do to yourself?

Charles Eugster

Stump, S. "World's Fittest 96-Year-Old, Charles Eugster, Shares Diet and Exercise Tips." <http://www.today.com/health/world-s-fittest-96-year-old-charles-eugster-shares-diet-t87956>.

Eugster, C. "Charles Eugster
Expert in Successful Ageing & Multiple Record Holder."
www.charleseugster.net/home.

Retirement 10th on the list of most stressful events

"The Holmes-Rahe Stress Inventory." <http://www.stress.org/holmes-rahe-stress-inventory/>.

Early retirement associated with early death

Wu, C., *et al.* "Association of Retirement Age with Mortality: A Population-Based Longitudinal Study among Older Adults in the USA." *J Epidemiol Community Health* 70, no. 9 (2016): 917-23.

Section Three: Retirement by the numbers

40% risk increase heart attack or stroke

Moon, J.R., *et al.* "Transition to Retirement and Risk of Cardiovascular Disease: Prospective Analysis of the Us Health and Retirement Study." *Soc Sci Med.* 75, no. 3 (2012): 526-30.

Retirement significantly increase the risk of being diagnosed with a chronic condition. 21% of retirees have any chronic condition. 11% of non-retirees do

Behncke, S. "Does Retirement Trigger Ill Health?". *Health Econ* 21, no. 3 (2012): 282-300.

Retirement associated with a decline of fluid intelligence and memory scores

Wroblewska, A. "Your Brain on Retirement." JSTOR,

<https://daily.jstor.org/your-brain-on-retirement/>.

Rohwedder, S., and R.J. Willis. "Mental Retirement." *J Econ Perspect* 24, no. 1 (2010): 119-38.

Retirees 40% increase in depression

Sahlgreen, G. H. "Work Longer, Live Healthier." *IEA Discussion Paper* 46 (2013): https://iea.org.uk/wp-content/uploads/2016/07/Work%20Longer,%20Live_Healthier.pdf.

Retirement associated with an increased risk for dementia

Dufouil, C. "Older Age at Retirement Is Associated with Decreased Risk of Dementia." *Eur J Epidemiol* 29, no. 5 (2014): 353-61.

Section Four: The good old days

Colonel Sanders bio

Getlen, L. "Cluck Off." *New York Post*, (April 15, 2012).
<http://nypost.com/2012/04/15/cluck-off/>

25% social network improvement

Patacchini, E., and G. V. Engelhardt. "Work, Retirement, and Social Networks at Older Ages." *Center for Retirement Research*
http://crr.bc.edu/wp-content/uploads/2016/11/wp_2016-15.pdf (2016).

Oxford English Dictionary

Pearsall, J. (ed.),. *The New Oxford Dictionary of English*. (1998) Oxford, UK: Oxford University Press. P. 1266

The behavioral benefits of nostalgia

Sedikides, C., and et al. "Nostalgia Fosters Self-Continuity: Uncovering the Mechanism (Social Connectedness) and the Consequence (Eudaimonic Well-Being)". *Emotion* 16 (2016): 524-39.

Section Five: The power of “our song”

“Reminiscing” by Little River Band

Agen, Mardee. “Little River Band – Reminiscing,” (2011).
<https://www.youtube.com/watch?v=gS4u3P2nFfg>

The practical benefits of nostalgia

Sedikides, C., and T. Wildschut. "Nostalgia: A Bittersweet Emotion That Confers Psychological Health Benefits." In *The Handbook of Positive Clinical Psychology*, edited by J. Johnson and A. Wood. Hoboken, NJ: Wiley, 2016.

Tierney, J. "What Is Nostalgia Good For? Quite a Bit, Research Shows." *New York Times*, July 8, 2013.

Section Six: The brains behind nostalgia

Brain imaging and nostalgia

Oba, K., et al. "Memory and Reward Systems Coproduce 'Nostalgic' Experiences in the Brain." *Soc Cogn Affect Neurosci* 11, no. 7 (2016): 1069-77.

Section Seven: The golden age: our twenties

Toy Story 3

Toy Story 3. Directed by Lee Unkrich (2010; USA: Walt Disney Pictures), Film.

The double-humped camel reminiscence bump

Jansari, A., and A.J. Parkin. "Things That Go Bump in Your Life: Explaining the Reminiscence Bump in Autobiographical Memory." *Psychol & Aging* 11 (2005): 85-91.

Biases in various life events and artistic exposures

Draaisma, D. *The Nostalgia Factory: Memory, Time and Ageing*. New Haven, CT: Yale University Press, 2013. p. 58 - 76

Section Eight: Thawing out in our sixties

Permastore

Bahrick, H.P., et al. *Life-Span Maintenance of Knowledge, 1st Edition*. Milton Park, UK, Taylor and Francis, Psychology Press 2013.

Draaisma, D. *The Nostalgia Factory: Memory, Time and Ageing*. New Haven, CT: Yale University Press, 2013. p. ix-xi

Caveats to reminiscence bump

Janssen, S.M., and et al. "The Reminiscence Bump in Autobiographical Memory: Effects of Age, Gender, Education, and Culture.". *Memory* 13, no. 6 (2005): 658-68.

Section Eight: The newly young ones

Langer's website, The Young Ones description, and quotes from the participants

"The Young Ones." The Langer Mindfulness Institute, <http://langermindfulnessinstitute.com/the-young-ones/>.

McDonald, T. "The Young Ones: Can Re-Living Your Youth Make You Young Again?" BBC, <http://www.bbc.co.uk/blogs/tv/2010/09/the-young-ones.shtml>.

Smith, P. "The Young Ones: You're Only as Old as the Era You Love." The Telegraph, <http://www.telegraph.co.uk/culture/tvandradio/8000407/The-Young-Ones-youre-only-as-old-as-the-era-you-love.html>.

Ellen Langer's research results

Langer, E., et al. "Nonsequential Development and Aging." In *Higher Stages of Development: Perspectives on Adult Growth*, edited by C.N. Alexander and E.J. Langer. Oxford, UK: Oxford University Press, 1990. P. 130 - 134

Ellen Langer's quote

Ibid., p. 135

Section Nine: A day in the life (past)

A Day in the Life

"A Day in the Life: An In depth Analysis." Apple Corporation, Interview with John Lennon and Paul McCartney <https://web.archive.org/web/20080419020720/http://www.applecorp.com/aditl/origins.htm>.

Section Eleven: Building a mighty river

Ngandu, T., et al. "A 2 Year Multidomain Intervention of Diet, Exercise, Cognitive Training, and Vascular Risk Monitoring Versus Control to

Prevent Cognitive Decline in at-Risk Elderly People (Finger): A Randomised Controlled Trial." *Lancet* 385, no. 9984 (2015): 2255-63.

Section Twelve: Hot spots of healthy old age

The Blue Zones

D. Buettner. "Here are the Secrets to a Long and Healthy Life." *National Geographic*,. April 12, 2015.

Greek Island

Panagiotakos, D. B., *et al.* "Sociodemographic and Lifestyle Statistics of Oldest Old People (>80 Years) Living in Ikaria Island: The Ikaria Study." *Cardiology Research and Practice* 2011 (2011): <http://dx.doi.org/10.4061/2011/679187>.

Costa Rica

Rosero-Bixby, L., *et al.* "The Nicoya Region of Costa Rica: A High Longevity Island for Elderly Males." *Vienna Yearb Popul Res* 11 (2013): 109-36.

20% of variance figure

Herskind, A.M., *et al.* "The Heritability of Human Longevity: A Population-Based Study of 2872 Danish Twin Pairs Born 1870–1900." *Hum. Genet.* 97, 319–323. 97 (1996): 319-23.

6% of variance figure

Karasik, D., *et al.* "Genetic contribution to biological aging: the Framingham Study" *J Gerontol A Biol Sci Med Sci* 59, no. 3 (2004): 218-26.

Lessons from the Blue Zones

"Lessons from the Blue Zones." In *Business Engagement in Building Healthy Communities: Workshop Summary*. Washington, DC: National Academy of Sciences, (2015)
<https://www.nap.edu/read/19003/chapter/3#6>

Section Thirteen: Now, Voyager

Voyager mission

“Voyager, The Interstellar Mission.” <http://voyager.jpl.nasa.gov>

“Voyager, The Interstellar Mission.”
<http://voyager.jpl.nasa.gov/mission/index.html>

Cost of various items:

Food

“1977 Economy/Prices.”
<http://www.1970sflashback.com/1977/economy.asp>

“1989 Economy/Prices.”
<http://www.1980sflashback.com/1989/economy.asp>

Stark, C. “By the Numbers are You Better Off?” CNN. (2012).
<http://www.cnn.com/2012/09/13/politics/btn-are-you-better-off/>

Honda

Martin, M. “1977 Honda Accord.” Jalopnik. (2008)
<http://jalopnik.com/5089743/1977-honda-accord>

“Is Today’s Honda Accord Cheaper Than It Was Back In 1989?” (2014).
<http://www.autoblog.com/2014/09/24/honda-accord-cheaper-now-than-1989/>

“2012 Honda Accord Reviews.” <http://www.autoblog.com/buy/2012-Honda-Accord/expert-review/>

Life expectancy changes

“United States, Life Expectancy at Birth.” (2015).
<https://www.indexmundi.com/facts/united-states/life-expectancy-at-birth>