INTERVENTIONS

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- **Management of Depression**
- **Diet**
- **Food Supplements (anti-oxidants)**
- **Exercise**
- **Adequate Sleep**
- **Stress Reduction**

APPROACHES

Functional Approach:

- Choose best environment
- Develop compensations
- Focus on everyday tasks

Cognitive Approach

- Rehearse attention, memory, planning skills
- Apply to real-life situations

INCREASED COGNITIVE ACTIVITY

Increased Cognitive Activity

- Improved Everyday Function
- Slowed cognitive decline

VIA changes in cerebral organization or function

Mind Games: The Aging Brain and How to Keep It Healthy *Wetzel, Kathryn, & Harmeyer, Kathleen*

The Memory Bible *Small, Gary*

Keep Your Brain Young *McKhann, Guy & Albert, Marilyn*

Brain Fitness *Goldman, Robert, Klatz, Ronald, & Berger, Lisa*

Exercises for the Whole Brain *Bradgon, Allen D.*

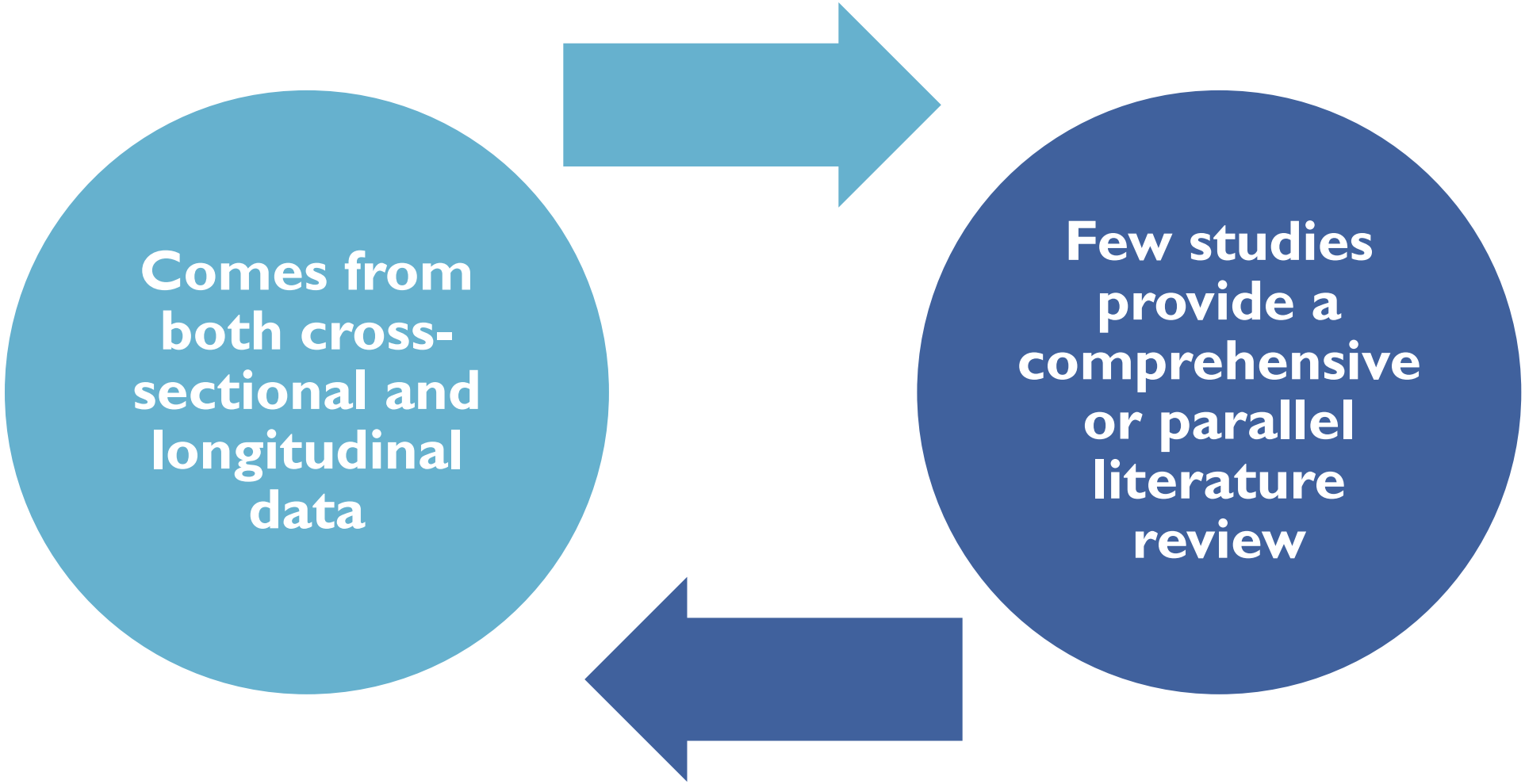
Exercise Your Mind *Castorri, B. Alexis*

Use It or Lose It: How to Keep Your Brain Fit as It Ages
Bragdon, Allen. D., & Gamon, David

Keep Your Brain Alive: 83 Neurobic Exercises to Help Prevent Memory Loss and Increase Mental Fitness
Katz, Lawrence C., & Rubin, Manning

Reversing Memory Loss: Proven Methods for Regaining, Strengthening, and Preserving Your Memory
Mark, Vernon H., & Mark, Jeffrey P.

MORE ACTIVE LIFESTYLES PREDICT PRESERVED COGNITIVE FUNCTION



MEASURING *WHAT, WHO, HOW?*

- Increased daily function
- Improved test performance
- Reduced risk of dementia
- Decreased rate of cognitive decline (preventing dementia?)
- Changes in the brain
  - Cerebral changes (regions used)
  - Increased dendritic networks and
  - Nerve growth
  - Neurochemical changes

- Normal community-dwelling elderly
- Normal but "limited" or "at-risk" elderly
- MCI elderly
- Demented elderly

Level, type or frequency of cognitive activity by self-report or observation → Type and frequency of physical activity by self-report → Train improved memory and organizational skills → Train increased mental flexibility → Educate about memory, aging, and coping → Measure or facilitate level of social activity

POSITIVE EMOTIONAL EXPRESSION PREDICTS LONGEVITY

Danner, Deborah D., Snowdon, David & Friesen, Wallace (2001)
The Nun Study

180 nuns, age/educationcorrected

ages 75-95

measured expressed emotion in autobiographies written just prior to taking final vows

Lower linguistic ability in early life predicts dementia and earlier death

ENGAGED LIFESTYLE: PARTICIPATION IN MENTALLY CHALLENGING ACTIVITIES PREDICTS HIGHER COGNITIVE SCORES (LAHAR, 2000)

- Used WAIS-R Vocabulary, Digit Span, Boston Naming Test
- Compared cognition to self-report of everyday activities
- TV Viewing related to lower verbal skills in all age group
- Demonstrated relationship between activity and cognition in younger (under 49) but not older (over 50)

ENGAGED LIFESTYLE: THE VICTORIA LONGITUDINAL STUDY

HULTSCH, HERTZOG, SMALL & DIXON, 1999

- 250 adults followed over six years
- Generally high functioning/well educated
- Measured:
  - Cognitive status on standardized tests
  - Activity level (both cognitive and physical)
  - Self-reported health
  - Personality (NEO)

- No relationship between:
  - Self-reported health and cognition
  - Personality and cognitive status
  - "active lifestyle" and cognition
- Supports relationship between *novel tasks* and cognition (working memory)
- Alternative interpretation: High-ability adults lead intellectually active lives

WW II VETERANS: GOLD ET AL, 1995

- WWII Veterans tested twice over a 40 year period
- Higher intellect, better education, and higher SES lead to a more engaged lifestyle
- Concluded that engaged lifestyle then contributes to maintenance of verbal intellect

For the World War II Veterans Study that measured people twice over a 40 year period. And of course by the second time they were pretty old and again found that higher intellect, better education, and higher SES led to a more engaged lifestyle.
First they looked at the cognitive status in the SES. Both people looked like they were busier people, more active mentally, more physically active, and concluded that an engaged lifestyle contributes to maintenance of verbal intellect.

SEATTLE LONGITUDINAL STUDY SCHAIE ET AL

- Begun in 1956 by K. Warner Schaie; since 1981 at Penn State with wife Sherry Willis
- Now over 5000 adults followed every seven years
- Both longitudinal data on intellectual change over time and cross-sectional work on intellectual training
- Adult Intellectual Development: the Seattle Longitudinal Study

- Cognitive training on spatial orientation and inductive reasoning tasks
- 5 hour individual training
- Found improvement on both domains and less than average decline in inductive reasoning at seven year follow-up

- Observations on better cognitive outcome in old age
  - Absence of chronic disease
  - Complex and intellectual stimulating environment throughout life
  - Flexible personality style
  - High intellectual status of spouse
  - Persisting high perceptual processing speed

MACARTHUR FOUNDATION STUDY

- 1200 participants
- Ages 70 – 80
- Followed for 10 years
- Better cognitive status predicted by:
  - Mental activity
  - Physical activity
  - Ongoing sense of meaning and contribution to community

LEARNING MNEMONIC STRATEGIES

- Yesavage, Sheikh, Friedman, & Tanke, 1990
- 218 community dwelling elderly
- Mean age of 67, range 55 – 87
- Four 2 hour sessions of face-name association and list-learning strategies
- Variety of one-week pretraining (imagery, relaxation, or imagery plus judgment)

- Both age and MMSE scores related to post-test performance
- No difference in type of pre-training on post-test performance
- Over age 75 had difficulty learning the list-learning mnemonic and performed poorer on both tasks
- Post test at the end of two week training; no follow-up

META-ANALYSIS OF MEMORY TRAINING IN *NORMAL* ELDERLY

- Verhaeghen, Marcoen, & Goossens, 1992
- 31 research studies reviewed
- Retesting alone enhances memory performance on standardized tests
- Memory training improves performance
- Training gains are specific to training (poor generalizability)

VERHAEGHEN, ET AL META-ANALYSIS

- Treatment gains in Memory training were largest:
  - In group training rather than individual
  - With younger participants
  - In shorter training sessions (less than 1.5 hours)
  - When pre-training was provided

LONGER-TERM MEMORY TRAINING

- Oswald, Rupprecht, Gunzelmann, & Tritt, 1995
- 375 people aged 75 – 89
- 272 treatment group, 103 controls
- Baseline, end-treatment, and one yr f/u
- Weekly intervention group over 30 weeks
- Training on:
  - Coping strategies
  - Memory Training
  - Psychomotor Training

- Memory groups improved memory test performance
- Coping strategy group improved everyday competence
- Best outcome was for combined psychomotor and memory training
- One yr f/u showed persisting effects of initial changes but overall performance decrements

LONGER-TERM VS. SHORTER MEMORY TRAINING

- Woolverton, Scogin, Shackelford, Black, & Duke, 2001
- 77 participants –community dwelling elderly
- Aged 60 – 88
- Self-paced instructional manuals
- 24 day one-hour study sessions
- 13 day shorter training geared to 3 targeted memory areas: names, locations of objects, dates and appointments

- Group overall demonstrated improved performance in memory strategy use
- The 24 session group proved much more effective at memory strategy use and in improving performance on objective memory measures
- Shorter group had no demonstrable changes in targeted memory areas

MEMORY TRAINING CAVEATS

- Memory training seems to have minimal effect on subjective measures of memory dysfunction (Floyd & Scogin, 1997)
- Memory training does not typically address memory problems most elders complain about (Leirer, Morrow, Sheikh, Pariante, 1990; Yesavage, Lapp, & Sheikh, 1989)
- Memory strategies require lots of effort and are seldom used outside of clinical training sessions (Park, Smith, & Cavanaugh, 1990)

RESEARCH OUTCOMES

- Education on memory, healthy lifestyle, and compensatory strategies can improve subjective memory and prospective memory
- Unclear if increased mental activity *late in life* can affect cognitive status or stave off dementia
- No documented association between
  - "mind games" and improved everyday function
  - "mind games" and decreased risk of dementia

FINAL OBSERVATIONS

- Keep what you've got rather than try to get back what you've lost
- Be social active—enhances both emotions and cognitions
- Engage in novel real-life mental activity throughout life
- Our emphasis should be on activity/behavior that *reduces disability* and improves everyday function