

***Social Capital as a Protective Factor
Against Cognitive Decline and Dementia***

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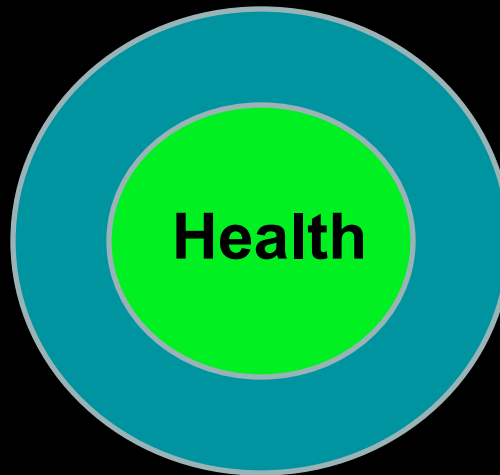
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Social Capital as Reserve

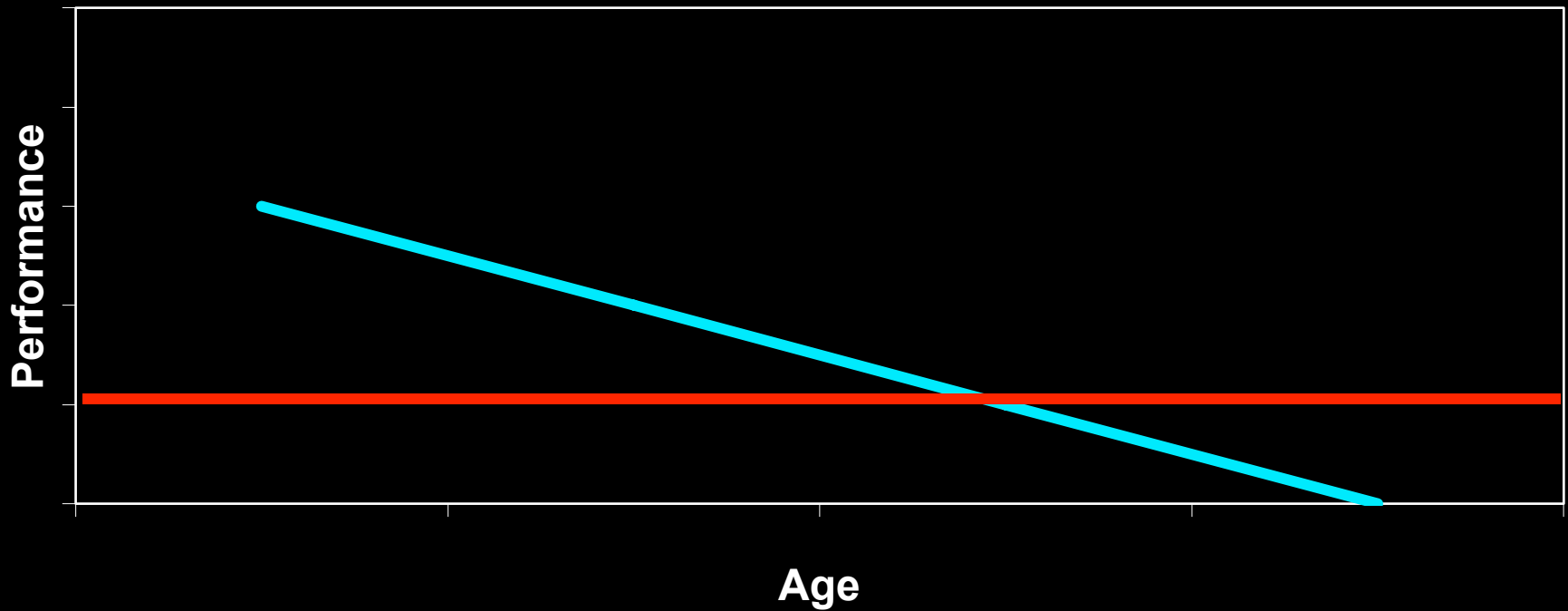
Outline

- A Model of Reserve
- Social Capital As Reserve
 - ‘Traditional’ social predictors of cognitive and brain health are crude and questionably reliable
 - Creative measures of social capital
 - Interplay between social, cognitive, and physical reserve and health
 - Lifespan effects on social capital and health
- Baycrest Research About Volunteering among Older adults (BRAVO) study

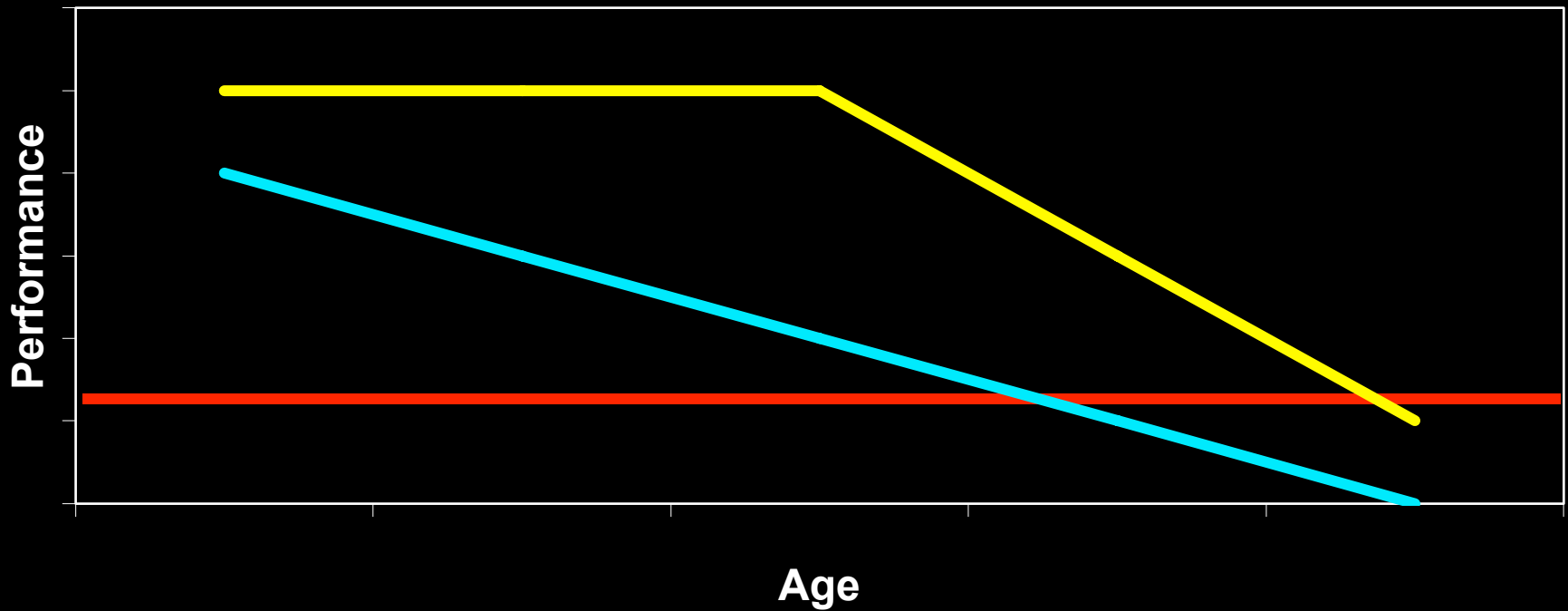
A Model of Reserve



Notion of Reserve



Notion of Reserve



Economics of Dementia

2010

- 35.5 million people with dementia
- \$604 billion total costs
- \$256 billion direct societal costs (= cancer + heart disease + stroke)

2030

- Total societal costs expected to increase 85%, with lower middle income countries affected the most

Wimo et al. (2013) *Alz & Dem*, 9, 1-11

Examples of Reserve

- Meta-analyses
- Prospective cohort studies, controlled for critical
 - Demographic
 - Health
 - Earlier wave measures
 - Etc.

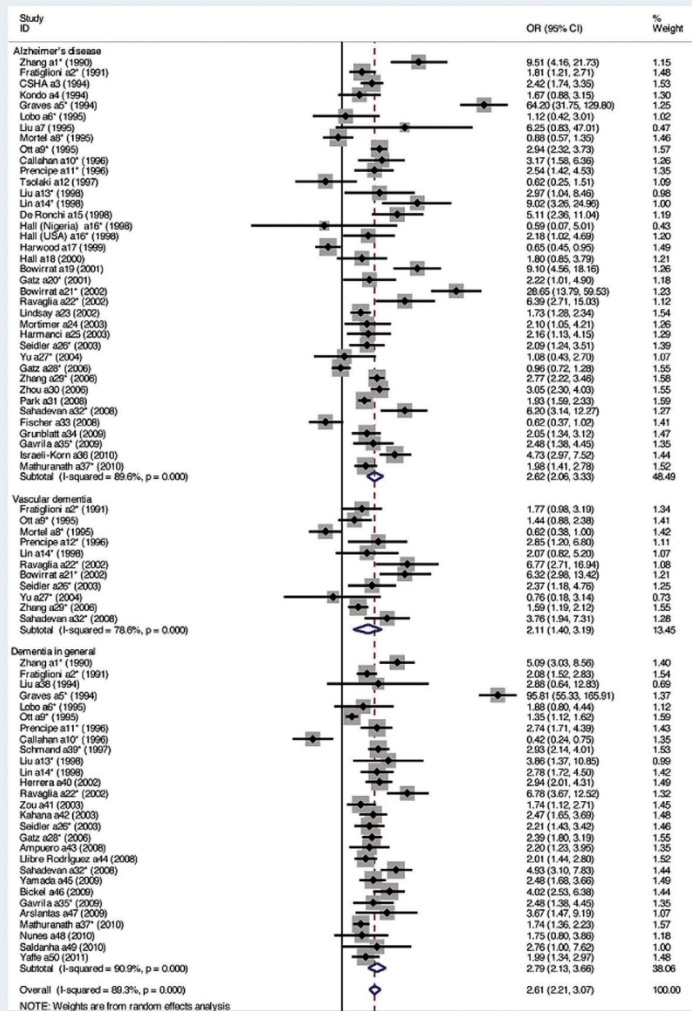
Examples of Reserve

Education

Low education increases the prevalence of dementia:

- by 1.61 for all-cause dementia
- by 2.62 for Alzheimer's disease

Meng & D'Arcy (2012) *PLOS One*, 7, e38268



Occupational Complexity

- Occupational complexity of work with **people** (1,2), with **things** (2), and with **ideas** (3) is associated with lower dementia risk
- Occupational complexity with **ideas** is associated with better cognitive functioning in older adults (4)

1. Andel et al. (2005). *JofG*, 65B, 251

2. Kroger et al. (2008). *Am J Epi*, 167, 820

3. Smyth et al. (2004). *Neurology*, 63, 498

4. Potter et al. (2008). *Neurology*, 70, 1803

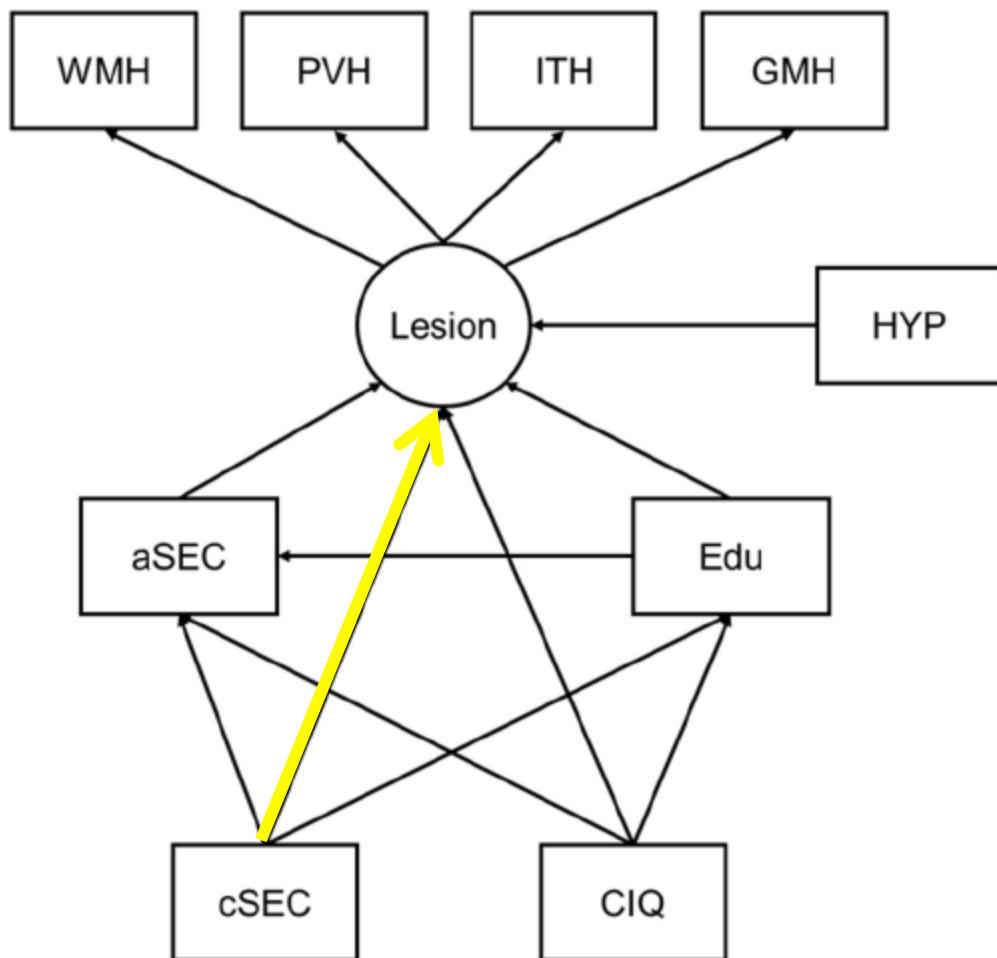
Childhood SES and Dementia

In 2005 Brazilians aged 65+:

- Raised in rural area (lower SES): OR=2.22
- Low literacy: OR = 1.82
- Non-skilled occupation: OR = 2.39

Scazufca et al. (2008) *Int J Epidemiology*

Examples of Reserve



Childhood SES and White Matter Disease

227 residents of
Aberdeen,
Scotland aged 68

Murray et al. (2014) *PLOS One*

Bilingualism

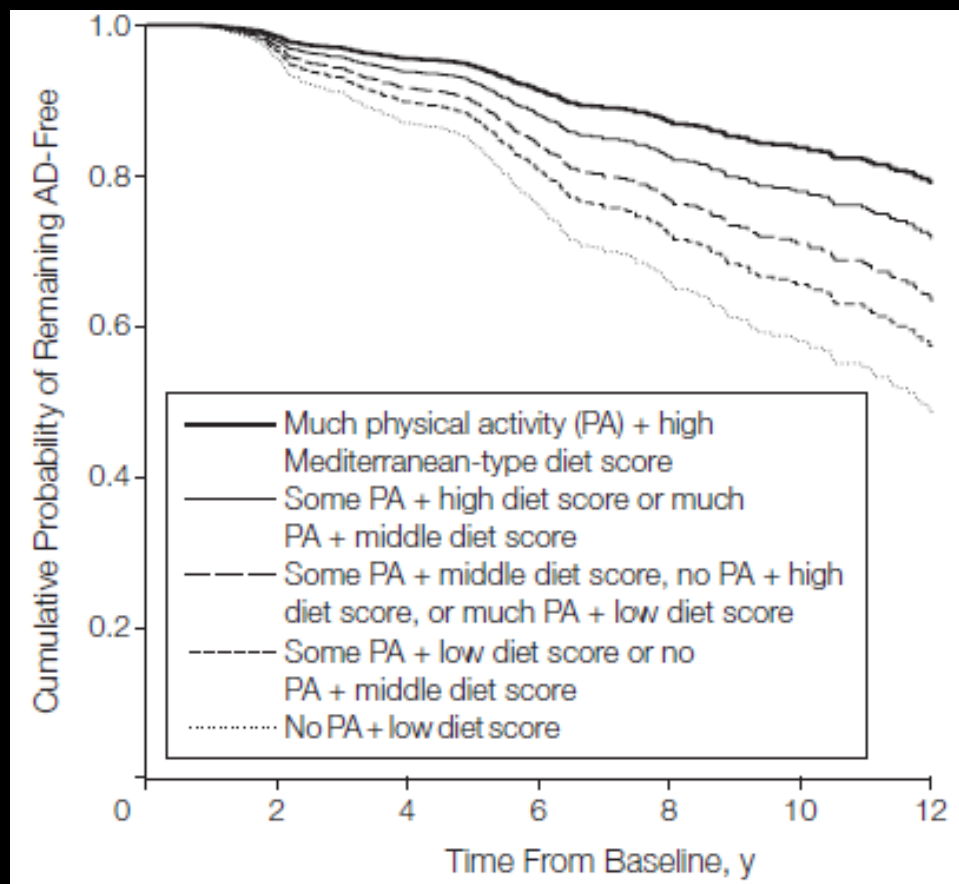
- Bilingual patients are diagnosed with dementia *four years later* than monolingual patients

Bialystok et al. (2007) *Neuropsychologia*, 45, 459-464

Craik et al. (2010) *Neurology*, 75, 1726-1729

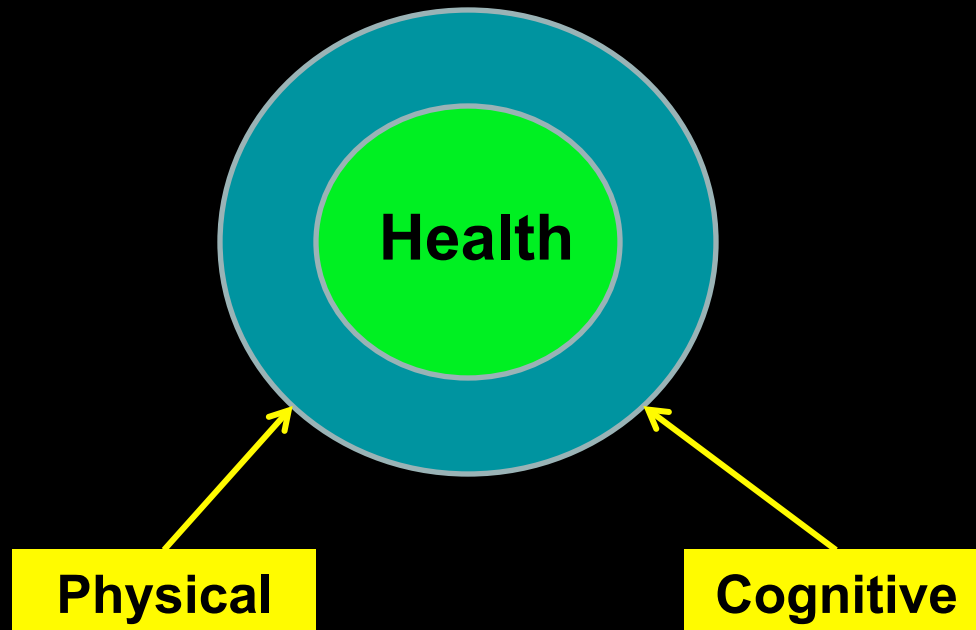
Examples of Reserve

Diet and Exercise

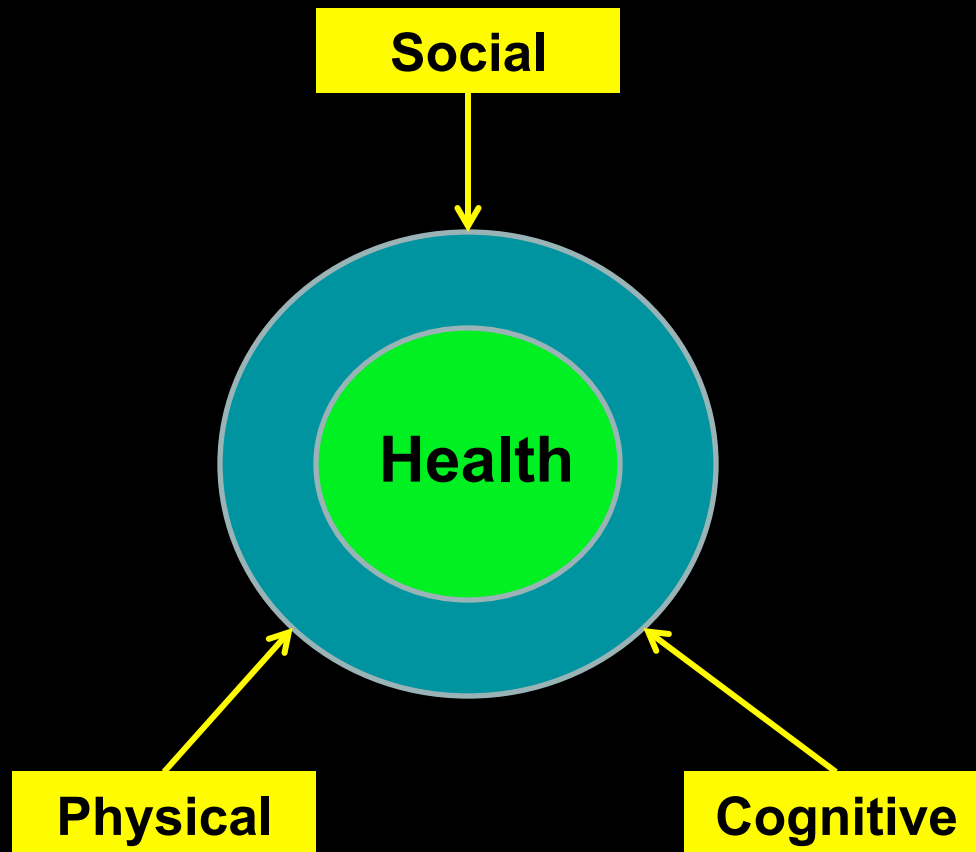


Scarmeas et al. (2009) *JAMA*, 302, 627-637

Noticing a Trend?



A Model of Reserve



Social Capital as Reserve

1. Traditional social predictors of cognitive and brain health are crude (lives alone) or of questionable reliability (social support)
2. Conceptualizing social capital as a source of reserve engenders more creative measures
3. Social, cognitive, and physical reserve and health are inextricably interlinked, and can be co-influenced
4. The influence of social capital on reserve occurs throughout the lifespan

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1. Social Capital as Reserve

Social Networks

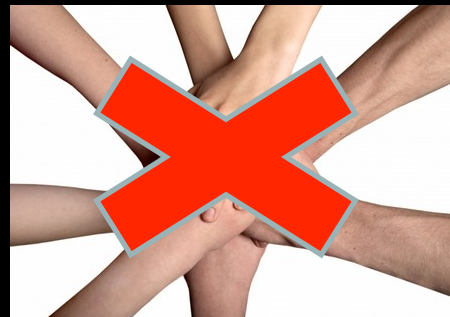
- Higher cognition and lower dementia rates among those
 - married/partnered (esp. for men)
 - with larger social networks and/or emotional support

Fratiglioni et al. (2004), *Lancet Neurology*, 3, 343-53

1. Social Capital as Reserve

Social Capital and Death

- Meta-analysis of 20 studies:
 - Social participation and social networks (size or frequency), but *not* social support, were associated with lower mortality



Nyqvist et al. (2014) *Social Indicators Research*, 116, 545-566.

1. Social Capital as Reserve

Living Alone v Feeling Alone

- Among nearly 500 Scottish residents:
 - Loneliness, but not social network size, was associated with satisfaction with life and cognitive functioning at age 79.



Gow et al. (2007). *J Ind Diff*, 28, 103-115

1. Social Capital as Reserve

Social Leisure

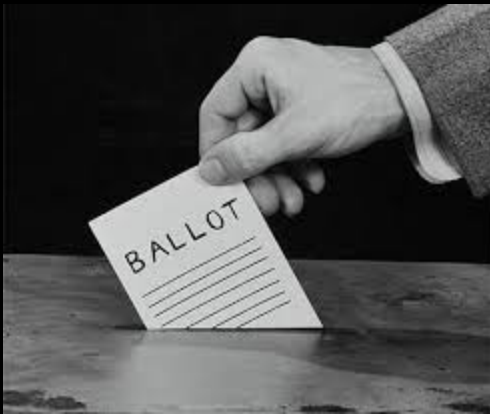
- Each 1-point increase in social activity (1.0-4.2) was associated with a 47% reduction in cognitive decline over 12 years
- The most frequently social seniors (3.3) experienced 70% less cognitive decline over this time

James et al. (2011). *J Int Neuropsychological Soc*, 17, 998-1005

1. Social Capital as Reserve

Neighbouring Linking Social Capital

- In the entire Swedish population aged 65+, the propensity to vote within a neighbourhood was inversely associated with the likelihood of antipsychotic medicine prescription.



Sundquist et al. (2014) *J Psychiatric Res*, 55, 44-51

See also work by Hamano and colleagues

Social Capital as Reserve

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2. Social Capital as Reserve

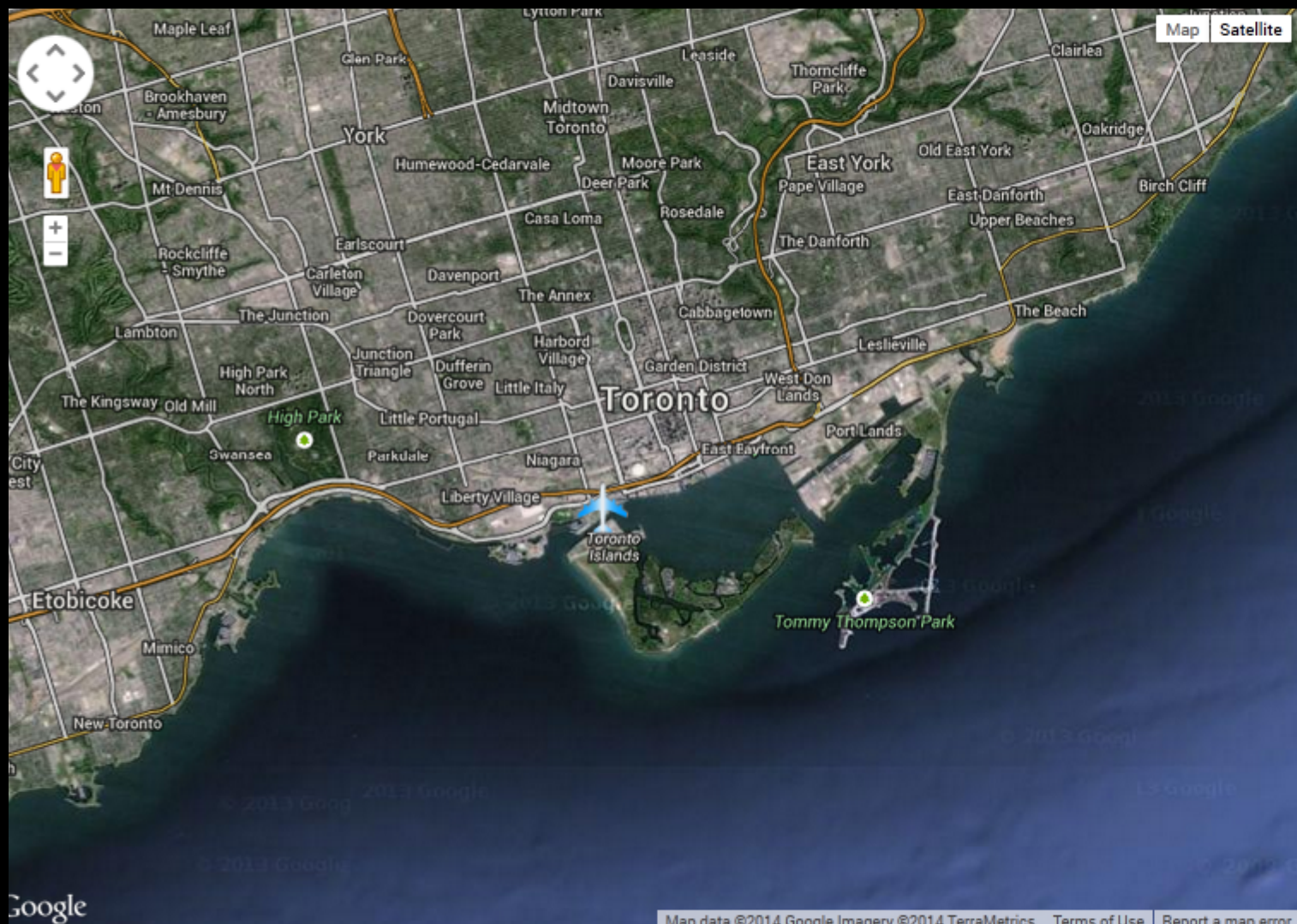
Environment & Attention (& Aggression)



Kuo & Sullivan (2001) *Environment & Behaviour*, 33, 343-367

Green space is associated with greater social engagement among seniors: Kweon, Sullivan, Wiley (1998) *Env Beh*

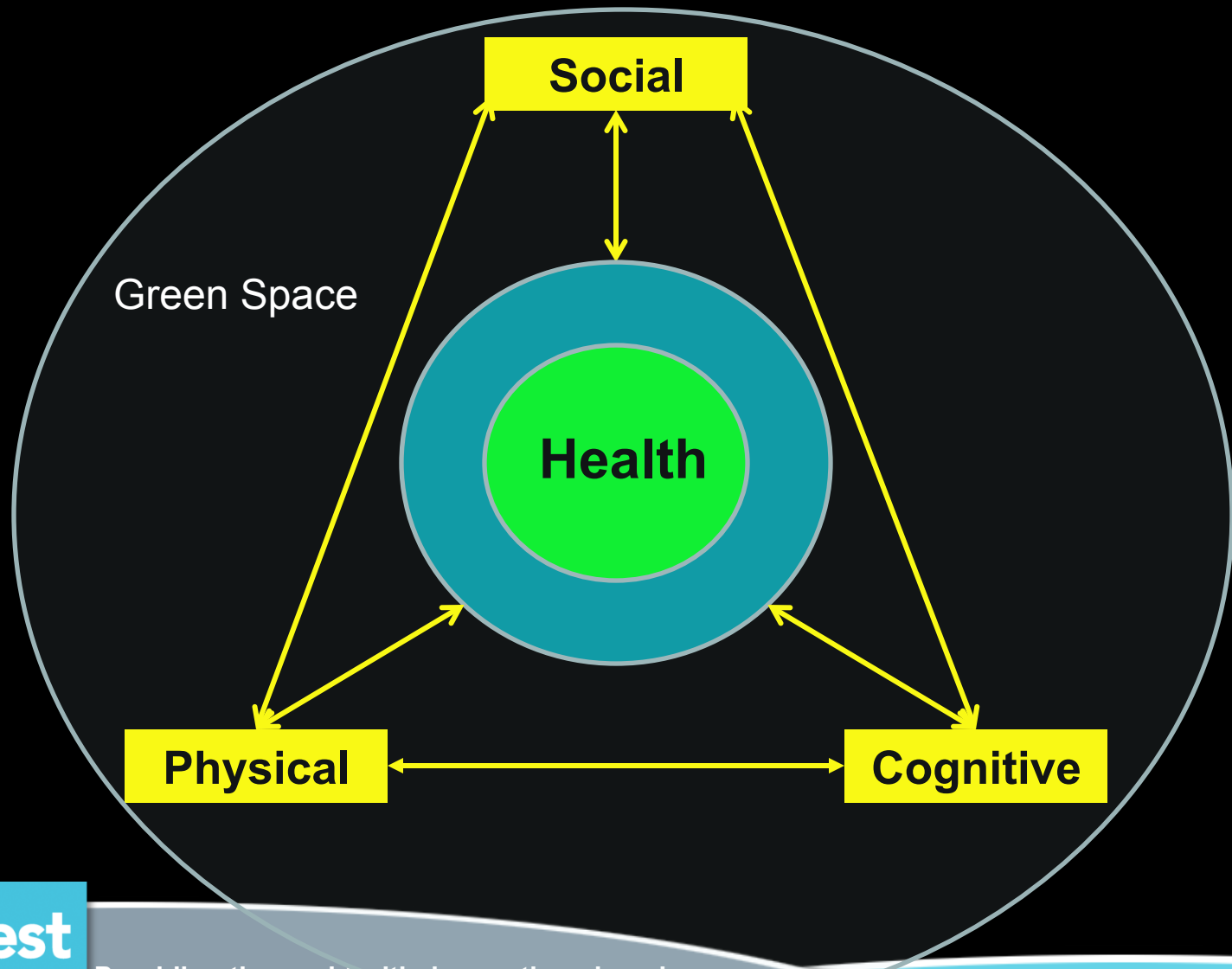
2. Social Capital as Reserve



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A Model of Reserve



3. Social Capital as Reserve

Complex Leisure

The more complex retiree's leisure activities,
the lower the dementia risk

- Physical = 39% risk reduction
- Cognitive = 29% risk reduction
- Social = 32% risk reduction
- Two, or all three = 47% risk reduction

Karp et al. (2006). *Dem Ger Cog Dis*, 21, 65-73.

3. Social Capital as Reserve

Everyday Impact of Memory Change

Themes	Normal Aging	MCI
Social & Interpersonal Relationships	<ul style="list-style-type: none">• Memory partners• Increased empathy for peers	<ul style="list-style-type: none">• Increased reliance on others• Social withdrawal & exclusion
Leisure Activities	<ul style="list-style-type: none">• Increased	<ul style="list-style-type: none">• Stopped or decreased

3. Social Capital as Reserve

Sensory Deficits

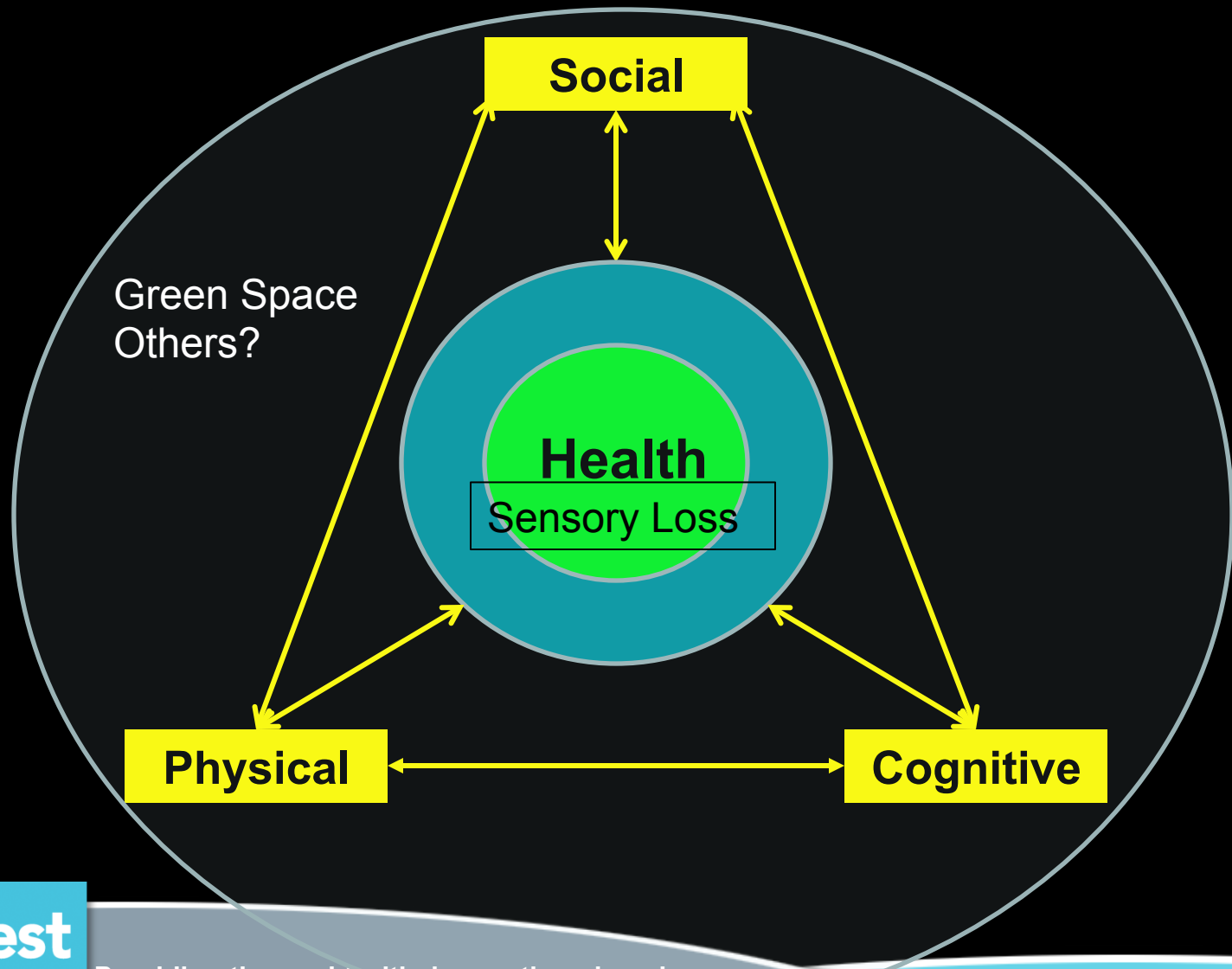
Hearing deficits are associated with greater social isolation, greater cognitive deficits, less physical activity, and greater dementia risk.



Frank Lin (2013) Aging, Speech, & Communication Meeting, Indiana Univ.

www.indiana.edu/~ascpost/2013

A Model of Reserve



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What happens in childhood matters immensely.

4. Social Capital as Reserve

Childhood SES

Growing up in a low SES family:

- More childhood anxiety, depression, ADHD
- Lower intellectual skills, cognitive abilities, and school attainment
- Is associated with parental stress, less healthy parenting
- Reduced synaptic density, neurotrophic factors



Hackman, Farah, Meaney (2010) *Nat Rev Neurosci*

4. Social Capital as Reserve

Childhood Maltreatment and Neglect

Childhood maltreatment and neglect experience during ages 0-11 was associated with reduced processing speed, executive functioning, and reasoning at age 29.

Nikulina & Widom (2013) *Neuropsychology*

4. Social Capital as Reserve

Early Parental Death

Losing a parent before the age of 11 was associated with a higher risk of dementia.

Whalley et al. (2013) *Int J Geriatric Psychiatry*, 28, 75-81.

4. Social Capital as Reserve

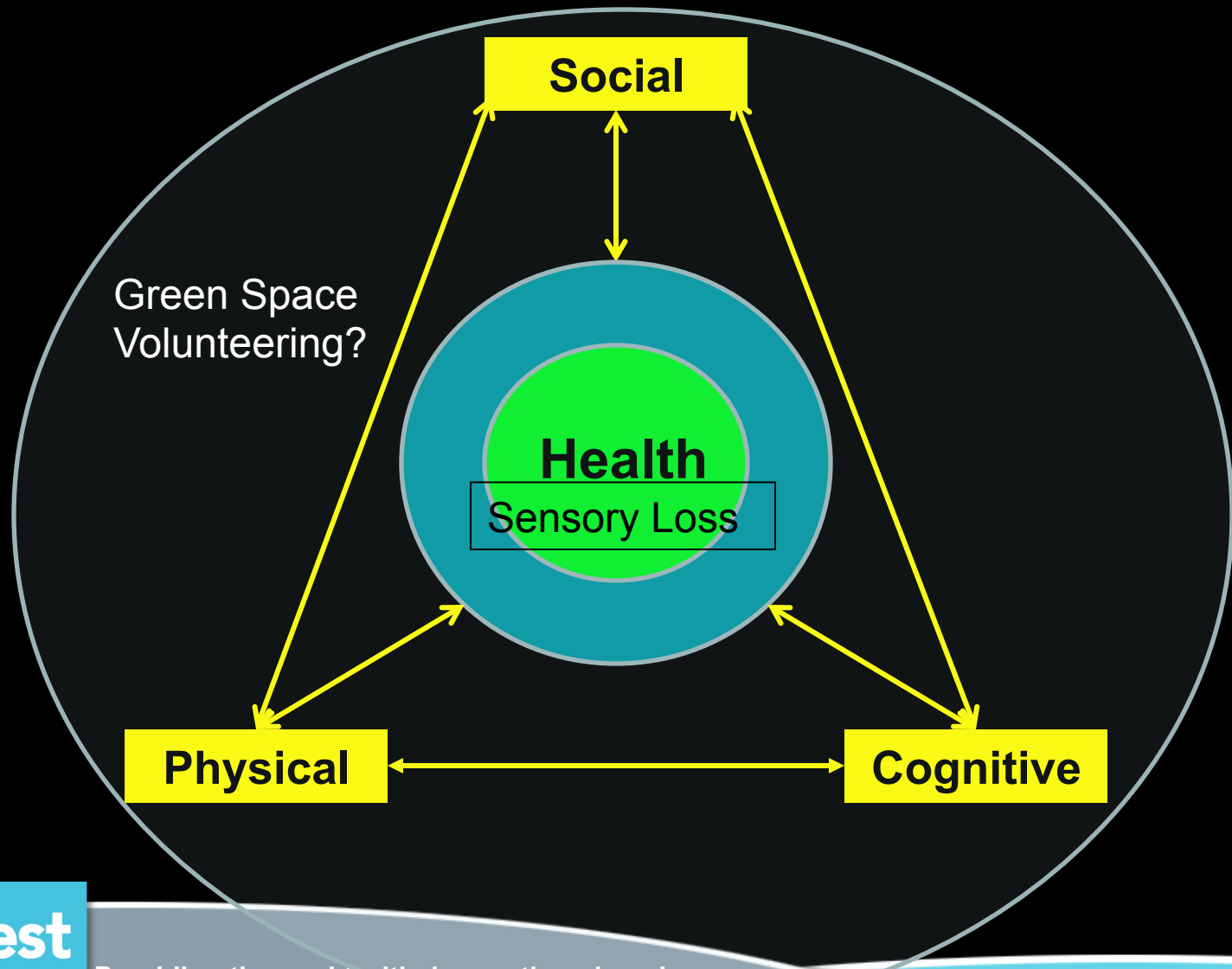
Maternal Warmth

Maternal warmth at age 19 (rated via observations of mother-*Harvard* son interactions) predicted the likelihood of dementia at age 90.



Vaillant et al. (2014). *Int J Geriatric Psychiatry*

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Jumping off Points

1. If social engagement, physical activity, and cognitive activity are protective against cognitive decline and dementia, so too should be volunteering.
2. The *complexity* of social, physical, and cognitive activity in volunteering should matter.

Volunteering

Canada

- 36.5% aged 65+
- Median 100 annual hrs
- \$4B economic impact

USA

- 24.1% aged 65+
- Median 86 annual hrs
- \$19B economic impact

Over time, seniors who volunteer show

- Less depression
- Better psychological well-being
- Better self-reported health
- Fewer functional limitations
- Lower mortality risk

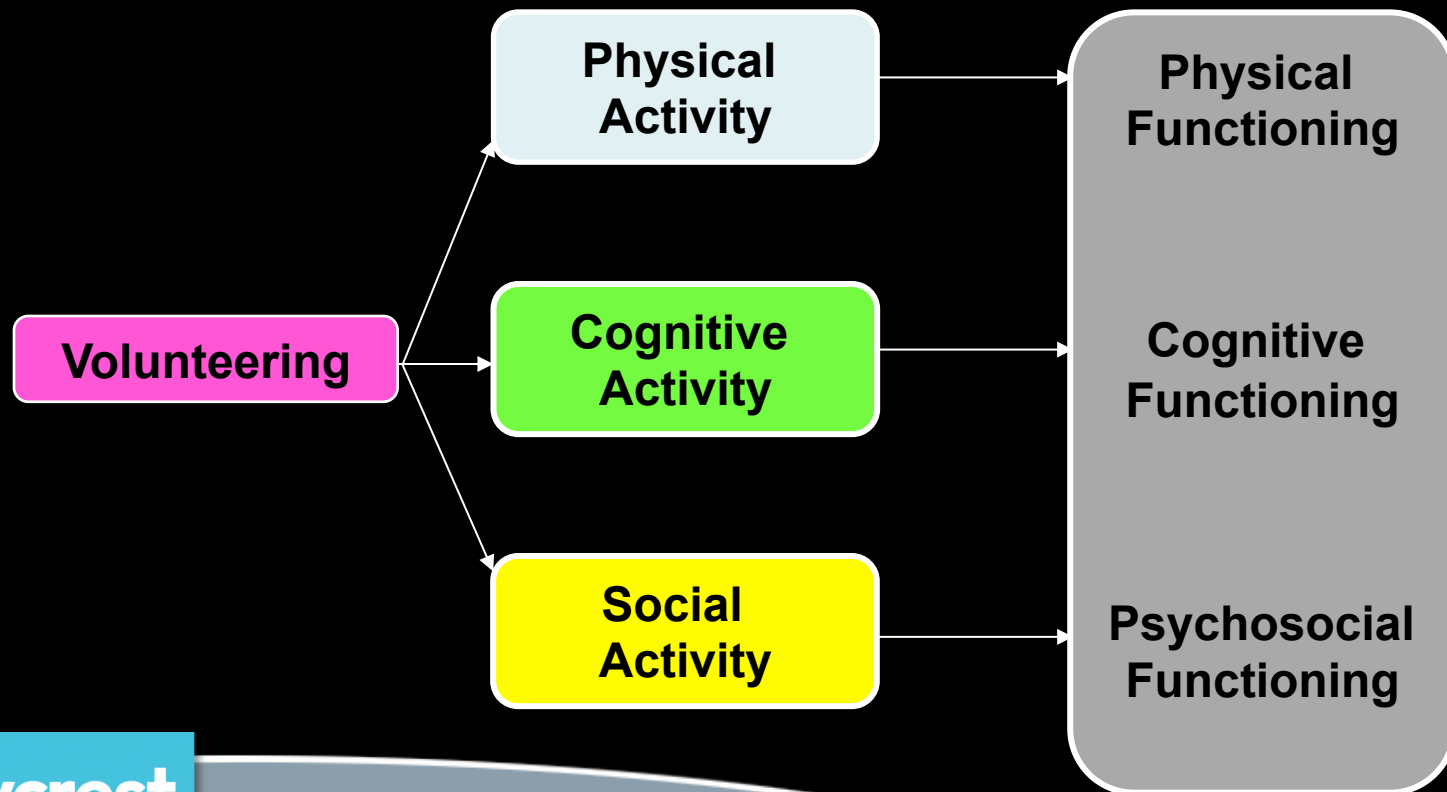
compared to seniors who do not volunteer

Anderson et al. (Aug 25,
2014) *Psychological Bulletin*

Thesis

Volunteer activities that are more socially, cognitively, or physically complex should confer bigger benefits.

Volunteering increases physical, cognitive, and social activity – to varying degrees depending on the volunteer role – which predicts improvements in physical, cognitive, and psychosocial functioning





BRAVO

Baycrest Research
About Volunteering
Among Older Adults

November 2013

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