Social Capital as a Protective Factor Against Cognitive Decline and Dementia

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Social Capital and Healthy Aging, 2014
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

Health
Notion of Reserve

Providing the world with innovations in aging

Baycrest
Providing the world with innovations in aging
Notion of Reserve

Providing the world with innovations in aging
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.
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
Examples of Reserve

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)

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

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Examples of Reserve

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
A Model of Reserve

Noticing a Trend?

Health

Physical

Cognitive
A Model of Reserve

Health

Social

Physical

Cognitive
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

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

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.

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

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
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2. Social Capital as Reserve

Environment & Attention (& Aggression)


Green space is associated with greater social engagement among seniors: Kweon, Sullivan, Wiley (1998) *Env Beh*
2. Social Capital as Reserve

Marc Berman – University of Chicago
Social Capital as Reserve

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A Model of Reserve

- Physical
- Cognitive
- Social

Green Space

Health
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

### Everyday Impact of Memory Change

<table>
<thead>
<tr>
<th>Themes</th>
<th>Normal Aging</th>
<th>MCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social &amp; Interpersonal</td>
<td>• Memory partners</td>
<td>• Increased reliance on others</td>
</tr>
<tr>
<td>Relationships</td>
<td>• Increased empathy for peers</td>
<td>• Social withdrawal &amp; exclusion</td>
</tr>
<tr>
<td>Leisure Activities</td>
<td>• Increased</td>
<td>• Stopped or decreased</td>
</tr>
</tbody>
</table>

Parikh, Troyer, Murphy, & Maione (under review)
Sensory Deficits

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

www.indiana.edu/~ascpost/2013
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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.

4. Social Capital as Reserve

Maternal Warmth

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

Vaillant et al. (2014). \textit{Int J Geriatric Psychiatry}
A Model of Reserve

- Health
  - Sensory Loss
- Physical
- Cognitive

Social

Green Space
Volunteering?
Social Capital as Reserve

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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

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