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# Areas of Investigation with Respect to Reserve and Resilience

- **Population studied:** Healthy, community-living older adults at risk for cognitive decline and dementia; MCI/AD dementia; longitudinal cohorts
- **Methods:** Behavioral and lifestyle/engagement interventions, structural and functional MRI
- I investigate: 1) **pre-preventive identification** of early risk antecedents and protective influences on later life cognitive health and functional decline; 2) **prevention** of age-associated cognitive and functional losses, AD and related dementias, depression, disability; and 3) **long-term outcomes** of cognitive intervention trials with both well and minimally-to-severely impaired elderly.

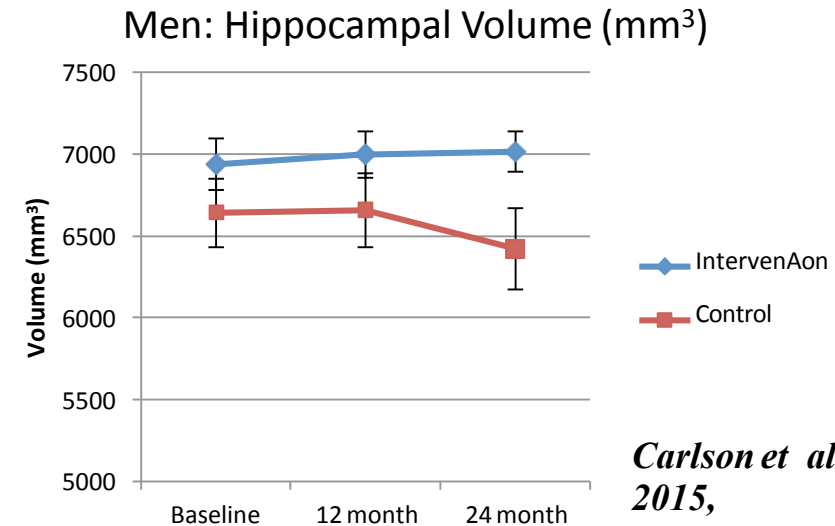
# Concepts Used in Research

- **Developmental plasticity** →→ The potential for change in adaptive capacity across the life course.
  - Implies that any given developmental outcome is but one of numerous possible outcomes.
  - Search for the conditions and range of developmental plasticity is fundamental to the study of life-span development.
- **Cognitive enrichment** →→ The combined effects of multiple lifestyle components of cognitive reserve – intellectual, social, physical - on cognitive functioning.
- **(Brain) maintenance** →→ Direct effect of lifestyle/ activities on aging/disease pathology.

# Example of Data that Address One Concept

- Concept: (brain) maintenance
- Measure: hippocampal volume
- Operational definition: Impact of multi-modal, real-world activity, on age-related brain atrophy, as determined by:

1. Increases in hippocampal volume in older adults exposed to a real-world activity intervention
2. Correlated intervention-specific memory increases



*Carlson et al.,  
2015,  
Alzheimer's &  
Dementia*

- Two-year increases in hippocampal volume (in men) associated with:
1. Exposure to Experience Corps Intervention vs. Control
  2. Improved episodic memory