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Areas of Investigation with Respect to Reserve and Resilience

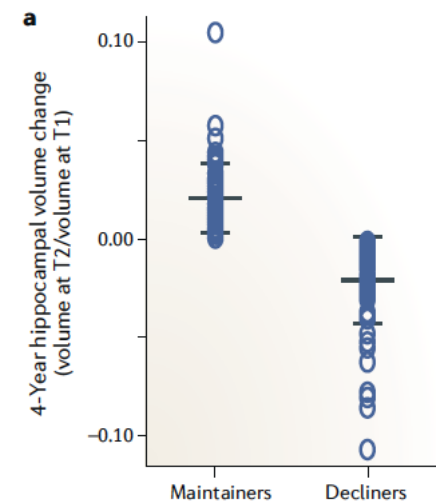
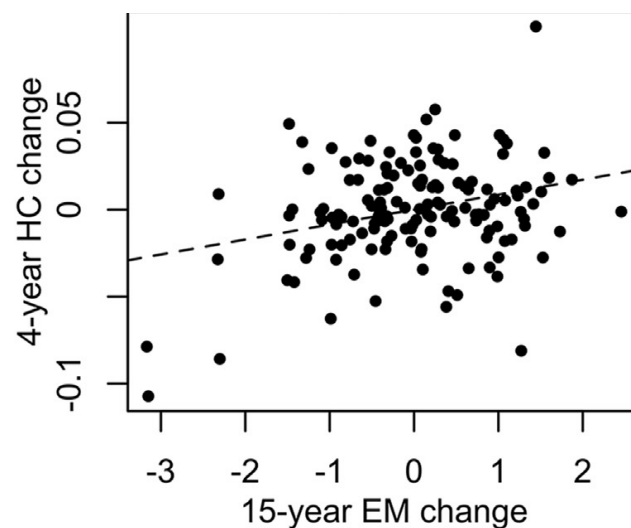
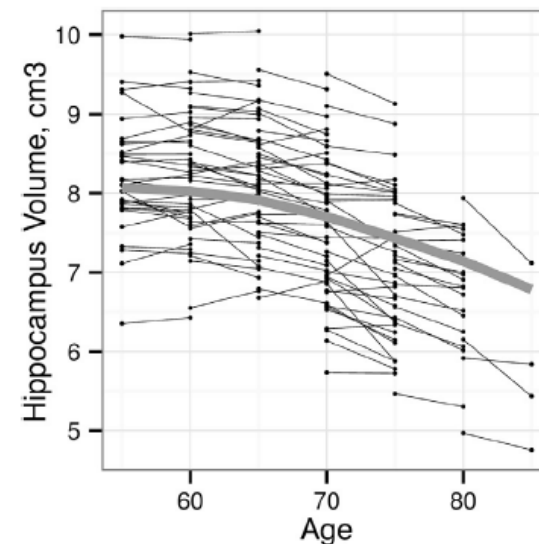
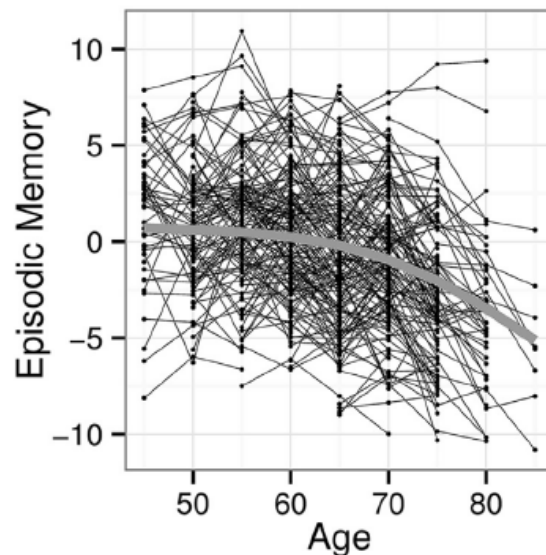
- Population Studied: Healthy and demented adults, longitudinal design
- Methods: s/fMRI, PET dopamine imaging, cognitive testing
- I investigate heterogeneity in cognitive-aging trajectories within large-scale population-based studies (*Betula*, *Cobra*, *Lifebtain*), and relate such variability to genetic factors, lifestyle, and brain measures.

Concepts Used In Research

- **Brain maintenance** → ‘Individual differences in the manifestation of age-related brain changes and pathology allow some people to show little or no age-related cognitive decline’ (Nyberg et al., 2012, TiCS)
 1. aging individuals are expected to differ widely in the amount of neurochemical, structural and functional brain changes that they display.
 2. the concept assumes a positive association between age-graded losses in brain and cognition: individuals displaying fewer losses in task-related brain properties will display lesser decline in memory performance.

Example of Data that Address One Concept

- Concept: brain maintenance
- Measure: hippocampus volume & episodic-memory (EM) composite from *Betula*
- ‘Operational definition’:
 1. Marked heterogeneity in EM- & hippocampus-volume change
 2. Individuals with no/little hippocampus atrophy had better preserved EM



Based on Gorbach et al (2016), NBA
- ongoing; large-scale analyses in *Lifebrain*