

Cognitive Reserve

An interdisciplinary workshop

Organizers

Matthias Kliegel, Andreas Ihle, Eric Widmer

A joint workshop by the Center for the Interdisciplinary Study of Gerontology and Vulnerability (CIGEV) and the Faculty of Psychology and Educational Sciences of the University of Geneva and the Swiss National Center of Competences in Research LIVES – Overcoming vulnerability: life course perspectives

Program Overview

Thursday, April 19, 2018

Room 126 – Boulevard du Pont d'Arve 28, 1205 Geneva

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| 09:30 | Yaakov Stern: <i>Cognitive Reserve: An Evolving Concept</i> |
| 11:00 | Coffee break |
| 11:30 | John Anderson: <i>Modifiable Factors Affecting Neural Decline in Aging: The Role of Bilingual Experience</i> |
| 13:00 | Lunch |
| 14:00 | Poster Session |
| 15:30 | Coffee break |
| 16:00 | Martin Lövdén: <i>Theoretical Frameworks in Aging Research: An Application to the Effects of Education on Cognition over the Adult Lifespan</i> |

Prof. Yaakov Stern

Columbia University, Alzheimer's Disease Research Center, New York, USA

<http://www.cumc.columbia.edu/adrc/profile/ystern>

Cognitive Reserve: An Evolving Concept

Epidemiologic evidence indicates that lifestyle factors including educational and occupational attainment, engaging in leisure and social activities, as well as IQ are all associated with reduced risk of developing dementia. Many of these lifestyle factors have also been associated with reduced rate of cognitive decline in normal aging, and have a similar moderating influence on the expression and progression in many other brain diseases. The cognitive reserve hypothesis posits that individual differences in the flexibility and adaptability of brain networks underlying cognitive function may allow some people to cope better with age- or dementia-related brain changes than others. This is in contrast to the complementary concept of brain reserve, where the variability in the anatomic features of the brain itself provides reserve against pathology. Recent evidence also supports the idea that specific genetic and lifestyle factors may help preserve a healthy brain or enhance brain reserve, a process that has been called brain maintenance. This talk will review the development, epidemiologic and imaging support for these theoretical concepts, and current efforts intended to promote collaboration on reserve-related research including definitions, measure and research guidelines.

Dr. John A. E. Anderson

York University, Lifespan Cognition and Development Lab, Toronto, Canada

<http://lcad.lab.yorku.ca/john-anderson/>

Modifiable Factors Affecting Neural Decline in Aging: The Role of Bilingual Experience

The proportion of seniors aged 60 and older is rising globally. In 2012 in Canada they comprised 21% of the population. By 2050, seniors are projected to include 41% of Canada's population. Finding approaches to maintain cognitive function and resist dementia in older age is, therefore, vital, as there are currently no useful pharmaceutical interventions offering long-term remittance of symptoms. One promising approach is to leverage long-term experiential factors that slow cognitive decline. These protective factors, called cognitive reserve include exercise, education, stimulating employment and speaking multiple languages. This last protective factor, bilingualism, has been shown to ward off dementia for up to 5 years, yet the neural correlates of how bilingualism contributes to cognitive reserve are not well established. I will present work from a new study in Toronto exploring the neural correlates of bilingualism including evidence from grey and white matter as well as fMRI.

Prof. Martin Lövdén

Karolinska Institutet, Aging Research Center, Stockholm, Sweden

<http://ki.se/en/people/marlov>

Theoretical Frameworks in Aging Research: An Application to the Effects of Education on Cognition over the Adult Lifespan

The literature on cognitive aging is full of loosely defined concepts and theories such as plasticity, reserve, brain maintenance, and compensation. I will present a theoretical analysis of these concepts and theories, and examine how they map onto the emerging picture of how education relates to cognitive performance across the lifespan. In this context, I will present novel results from our use of historical reforms of compulsory schooling in Sweden as quasi-experimental instruments to estimate effects of education on intelligence and hospitalization and death due to dementia. Together, these studies indicate that education causally increases intelligence in younger adulthood and that these effects are maintained through adulthood into older age, which partly explains the protective effect of education on late-life dementia diagnosis.

Poster session

- Zoltan Apa: *Converging cognitive abilities and gait parameters during aging*
- Sebastian Baez Lugo: *Exploring the neural network of empathy and its modulation in the ageing brain*
- Serhiy Dekhtyar: *Intellectual and social stimulation over the life course: A study of cognitive reserve in dementia from the Swedish National Study on Ageing and Care - Kungsholmen*
- Valentina Garibotto: *Tau PET imaging evidence for reserve*
- Alan J. Gow: *What keeps you sharp? A UK-wide survey of beliefs about, and knowledge of, cognitive ageing*
- Petra Kozma: *The influence of cognitive reserve on late life cognitive function - a cross-sectional analysis*
- Ralf Lürding: *Formal education and cognitive reserve in patients with multiple sclerosis*
- Larisa Morosan: *Reflective functioning and externalising behaviours during adolescence*
- Carol Opdebeeck: *Can cognitive reserve moderate the association between depression and dementia?*
- Elvira Lara Perez: *Cognitive reserve is associated with quality of life: A population-based study*
- Elena Poznyak: *Attention difficulties and the development of social cognition in adolescence*
- Julia Sauter: *The association of leisure activities in mid-adulthood and cognitive functioning in old age: The role of social capital*
- Claudine Sauvain-Dugerdil: *The family, a social reserve or a collective conversion factor ?*
- Fanny Vallet: *The role of cognitive reserve on motivation for cognitive activities in older age: Motivation as an mediator for the cognitive reserve-performance association*