Cognition in the Canadian Longitudinal Study on Aging

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Cognition

- What is cognition?
- Does cognition change as we age?
- What are neurocognitive disorders?

Canadian Longitudinal Study on Aging (CLSA)

- What is the CLSA?
- What can the CLSA tells us about the cognitive functioning of Canadians?

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Canadian Longitudinal Study on Aging
Étude longitudinale canadienne sur le vieillissement

Canadian Longitudinal Study on Aging (CLSA)

- Strategic initiative of CIHR; on Canadian research agenda since 2001
- More than 160 researchers and collaborators – 26 institutions
- Multidisciplinary – biology, genetics, medicine, psychology, sociology, demography, economics, epidemiology, nutrition, health services
- Largest research platform of its kind in Canada for breadth and depth
- Following 51,338 Canadians aged 45-85 at baseline for 20 years

Canadian Longitudinal Study on Aging (CLSA)

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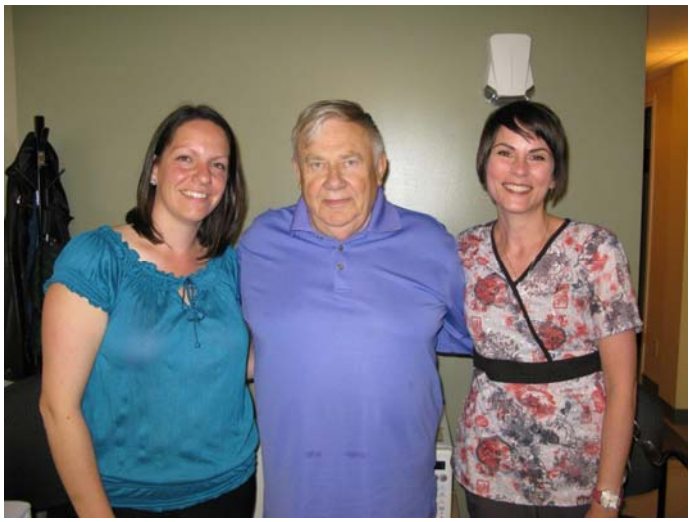

Canadian Longitudinal Study on Aging (CLSA)

What is the Canadian Longitudinal Study on Aging (CLSA)?

A research platform – infrastructure to enable state-of-the-art, interdisciplinary population-based *research* and *evidenced-based* decision-making that will lead to better health and quality of life for Canadians.

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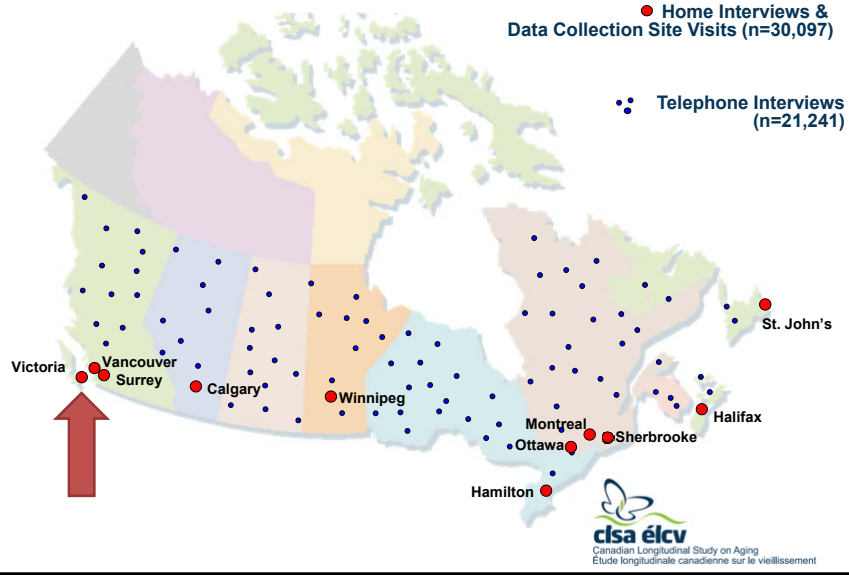
National Scope



Depth and Breadth of CLSA

PHYSICAL & COGNITIVE MEASUREMENTS

- Height & weight
- Waist and hip measurements
- Blood pressure
- Grip strength, timed up-and-go, chair raise, 4-m walk
- Standing balance
- Vision (retinal imaging, tonometer & visual acuity)
- Hearing (audiometer)
- Spirometry
- Body composition (DEXA)
- Bone density (DEXA)
- Aortic calcification (DEXA)
- ECG
- Carotid intima-media thickness (ultrasound)
- **Cognitive assessment (30-minute battery)**
- Biospecimen collection (blood and urine)

HEALTH INFORMATION

- Chronic disease symptoms (11 chronic conditions)
- Medication and supplement intake & compliance
- Women's health
- Self-reported health-care utilization
- Oral health
- Administrative data linkage health services, drugs and other administrative databases

PSYCHOSOCIAL

- Social participation
- Social networks and support
- Caregiving and care receiving
- Mood, psychological distress
- PTSD
- Injuries and consumer products
- Work-to-retirement transitions
- Personality traits
- Retirement planning
- Social inequalities
- Mobility-lifespace
- Built environments and contextual factors
- Income, wealth and assets

LIFESTYLE & SOCIODEMOGRAPHIC

- Smoking
- Alcohol consumption
- Physical activity (PASE)
- Nutrition (nutrition risk and food frequency)
- Ethnicity/race/gender
- Birth location
- Marital status
- Education

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CLSA Data Collection

Data Collection Site

Physical Assessments:
- Height, Weight, BMI
- Bone Density, Body Composition, Aortic Calcification
- Blood Pressure
- ECG
- Carotid Intimal-Medial Thickness
- Pulmonary Function
- Vision & Hearing
- Performance testing

Biospecimen Collection:
- Blood
- Urine

Cognitive Assessments:
- **Neuropsychological Battery**
  - **Memory**
  - **Executive function**
  - **Reaction time**

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What data are available?

- **Data from 51,338 participants are now available to the research community including:**
  - Questionnaire data from all 51,338 participants
  - Comprehensive physical assessment data and hematological biomarkers from 30,097 participants who visited data collection sites

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Funding to examine cognitive data

Pacific Alzheimer Research Foundation

Société Alzheimer Society CANADA

- In 2015, we applied for funding the from Alzheimer Society of Canada and the Pacific Alzheimer Research Foundation to examine the cognitive measures in the CLSA telephone and comprehensive interviews and received funding in 2016

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Funding to examine cognitive data

- Research Team:
  - H. Tuokko, University of Victoria
  - L. Griffith, McMaster University
  - M. O'Connell, University of Saskatchewan
  - M. Simard, Laval University
  - V. Taler, University of Ottawa
- Research Associates (at UVic):
  - S. Voll, H. Kadlec

Funding to examine cognitive data

- Examine how Canadians typically perform on measures of cognitive functioning
- Understand the health and lifestyle factors that affect cognitive functions
- Develop Canadian comparison standards

Funding to examine cognitive data

Pacific Alzheimer Research Foundation

Société Alzheimer Society CANADA

- Create computer algorithms and other tools for interpretation that can be used by health providers in clinical practice;
- Lay the foundation for refinement of this information when longitudinal data becomes available.

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Why are Canadian comparison standards needed?

- Existing normative standards based on non-Canadian samples
- Existing normative standards may be outdated
- Existing normative standards for measures may not cover the full spectrum of ages from mid-life to later life

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Why are Canadian comparison standards needed?

- Existing normative standards may not take into consideration important health and lifestyle factors
- Existing normative standards may be available for individual measures only

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The plan

- Select a neurologically healthy subsample
- Examine performance on each measure
  - Remove impossible scores
- Describe performance on each measure to identify possible important influences (e.g., age, sex, educational attainment, language, hearing, vision, etc)
- Characterize each measure taking into account important influences

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The plan, continued

- Combine the measures to minimize over-identification of poor performances and increase specificity as to typical performances
- Propose user-friendly tools for interpretation that can be used by health providers in clinical practice

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The plan, continued

- Consult with health providers in clinical practice concerning the adequacy of the tools
- Rework tools to address concerns and maximize their utility for easy access by clinicians

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Findings to date

- Comparisons with other studies
- Do medical conditions affect scores on measures of cognition?
- Remembering to remember

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Comparison with other studies

- Word recall
- Generation of words
- Switching task

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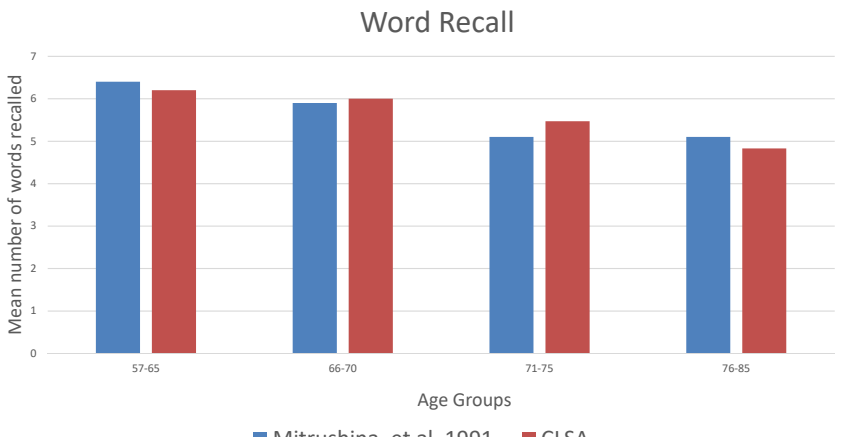
Comparisons with other studies



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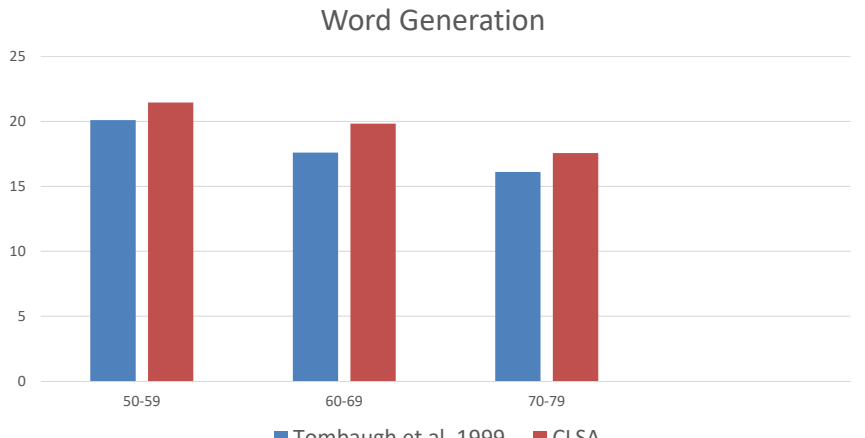

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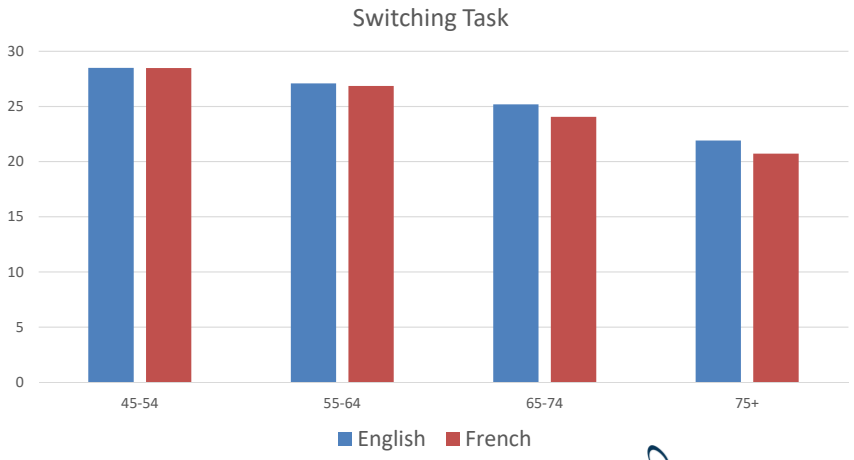
Comparisons between languages



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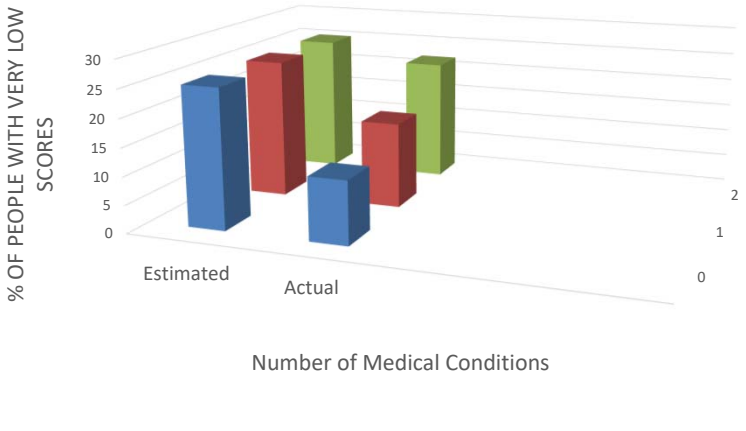

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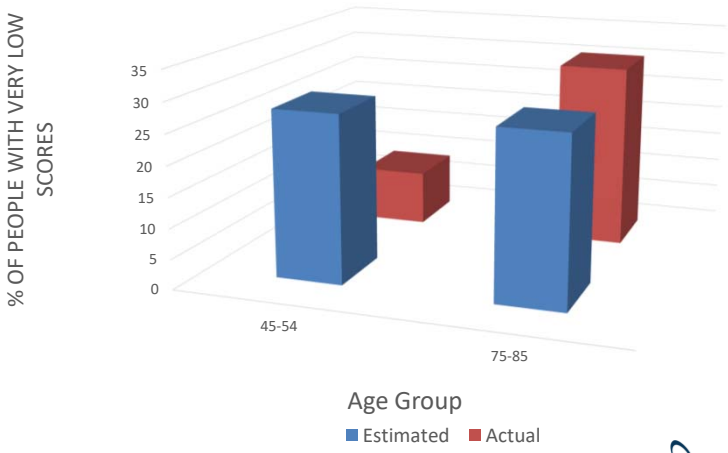
Does age affect scores on measures of cognition?



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Findings to date

- Remembering to remembering
  - Neurologically healthy sample
    - Men/Women
    - Age groups
    - English/French
    - Educational attainment

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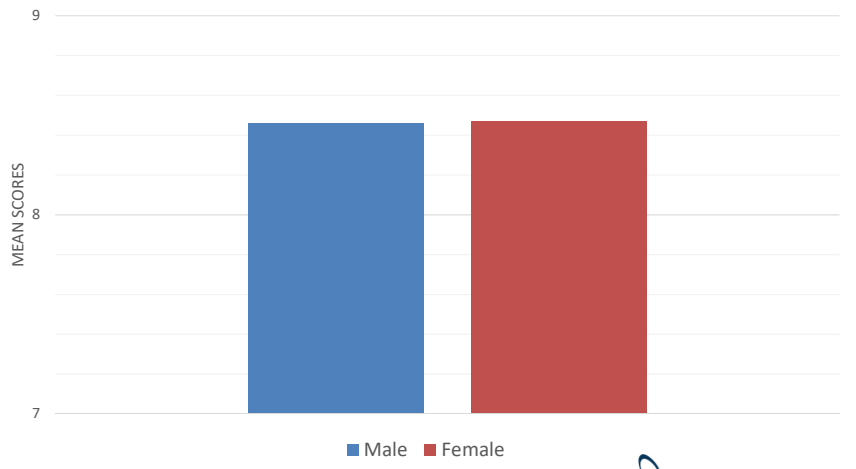
Gender



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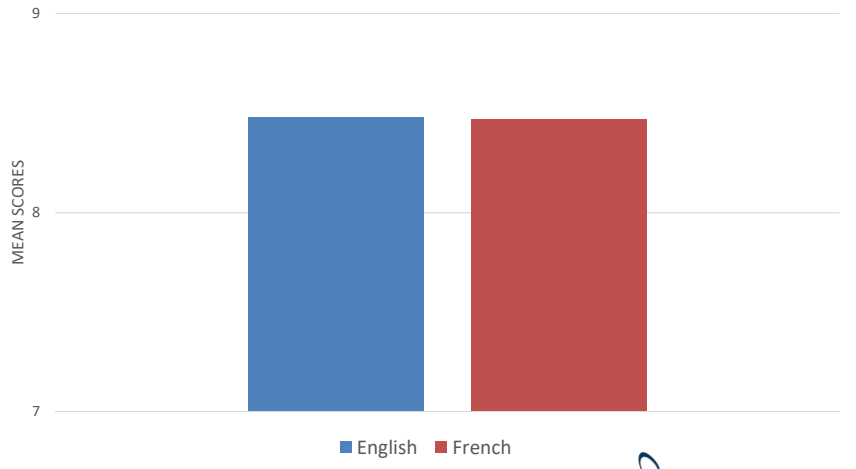
English & French



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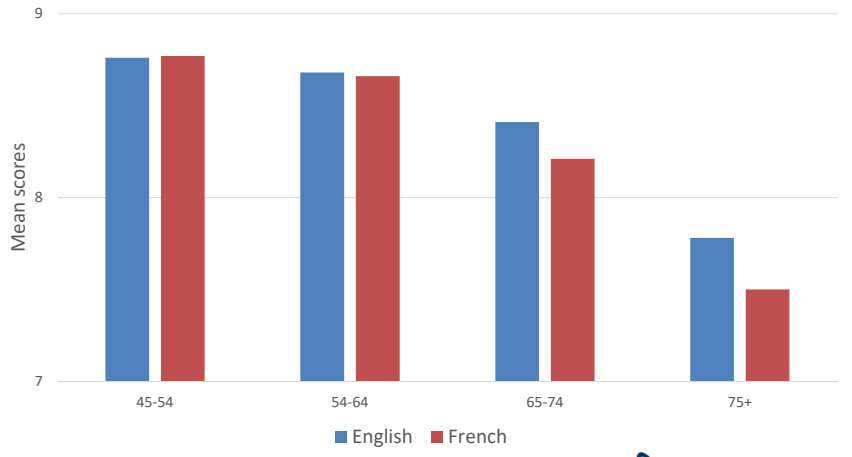
Age & Language



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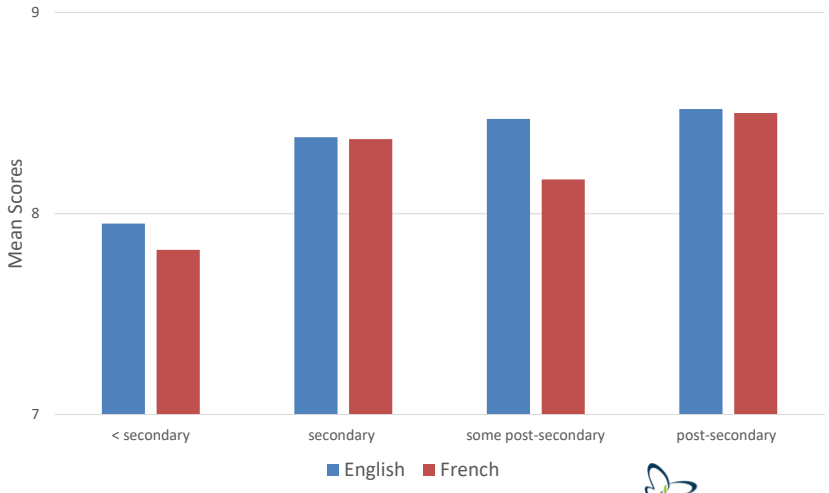
Education & Language



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Findings to date

- Telephone interview data
- Data Collection Site information

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Ongoing Research

- Continue this line of investigation to:
  - Develop Canadian comparison standards;
  - Create tools for interpretation that can be used by health providers in clinical practice;
  - Lay the foundation for refinement of this information when longitudinal data becomes available.

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Thank you for supporting the Canadian Longitudinal Study of Aging

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