Cognitive Aging: Opportunities and Challenges in the CLSA

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Cognition in the context of the CLSA

• Life course perspective
  – Lifelong adaptation
  – Multiple Factors
    • Individual (biological, psychological, behavioral)
    • Environments (Physical, relational, societal)

• Themes
  – Working Groups
  – Key domains

• Integration across themes
Cognition in the context of the CLSA

• Psychology Theme
  – Working Group
    • Developmental Psychology
    • Health Psychology
    • Neuropsychology
    • Social Psychology
Cognition in the context of the CLSA

- Psychology Domains
  - Cognition
  - Mood
  - Affective balance
  - Personality
  - Life satisfaction
  - Self-efficacy
Cognition in the context of the CLSA

• Psychology Domains
  – Cognition
  – Mood
  – Life satisfaction
  – Coping
  – Psychopathology (distress)
Cognition in the context of the CLSA

• Viewed as:
  – Antecedents
  – Mediators
  – Outcomes
Cognition in the context of the CLSA

• Relevant to:
  – Health conditions and behaviors
  – Everyday functioning/competence
  – Quality of life
  – Family and social relations
  – Work and retirement
Cognition in the context of the CLSA

• COGNITION
  – Cognitive aging
  – Age-associated cognitive disorders
  – Requisite for adaptive functions
Cognition in the context of the CLSA

- Memory
- Executive Functions
- Psychomotor Speed
Selection of cognitive measures

• Selection of measures appropriate for use with the CLSA target population (i.e., adults aged 40-84).
  – Factors to consider:
    • a) age of the participants
    • b) survey time constraints
    • c) sensitivity of the measures to change
    • d) issues related to order of presentation of measures
    • e) need to develop alternate forms
    • f) issues relevant to the translation of these measures into French and possibly other languages.
Selection of cognitive measures

• Cognitive measurement

• Performance versus self-report measures
CLSA Measures of Cognition

• Memory-
  – Rey Auditory Verbal Learning Test (RAVLT)
  – (Trial 1 and Delay Trial)

• Executive Function –
  – Mental Alteration Test (MAT) – Subgroup with Trial
  – Prospective Memory Test (PMT)
  – Stroop Neuropsychological Screening Test (??)
  – Letter Word Naming (Controlled Oral Word Association Test, FAS)
  – Verbal fluency (category)

• Psychomotor Speed –
  – Simple and Choice Reaction Times (RTs)

• Underlined instruments to be collected as part of CCHS/CLSA, all instruments to be collected in comprehensive CLSA.
Opportunities

• Cognition at baseline
  – Description of sample
Opportunities

• Cognition over time
  – Precursor
  – Mediator
  – Outcome
Cognition as a precursor

• Cognitive functioning, in one or more cognitive domains, relevant to:
  – the development of brain disorders such as Alzheimer’s disease
  – well-being
  – the need for care
  – utilization of health services
  – social engagement
Cognition as Mediator

• Cognitive functioning, in one of more domains, acts as mediator between:
  
  – SES and health
  
  – recovery from illness
Cognition as an Outcome

• Lifestyle factors influence the developmental trajectory of cognitive functioning
  – physical fitness and
    • executive functioning
    • working memory
    • attention
    • patterns of cognitive decline psychomotor speed, control processes, visuo-spatial functions
Cognition as an Outcome

• Biological factors influence the developmental trajectory of cognitive functioning
  – genetic variants increase risk for Alzheimer’s disease, cerebrovascular dementia
  – genes related to specific cognitive functions (executive function, episodic memory visuospatial skills)
  – some gene variants appear be protective for cognition
  – gene environment interactions increase the risk of cognitive decline
Opportunities

• Cognition over time
  – cross-study comparisons and integration of research findings across studies
Challenges

• Cognition in the CLSA
  – Brevity of measurement
    • Domains assessed
    • Strength of measures
    • Intent of measures
  – Characteristics of measures
    • Commonly used versus something new
    • Multi-lingual
    • Sensitivity to change
Challenges

• Cognition in the CLSA
  – Nature of measurement
    • Performance
    • Standard administration requiring training
    • Standard scoring requiring training
  – Context of study
    • Subcomponent competition
    • Staff familiarity with measures and approaches
    • Participant Burden
Overcoming the Challenges

• Supplement with spin-off studies that link the brief measures we have with other measures
• Examine how measures function at different points in the life course and over time
• Examine whether we chose the “right” measures for different purposes
• Examine issues relevant to language of administration
• Examine how best to identify “impairment”
CCHS Validation work

- CCHS- Healthy Aging (2009)
  - RAVLT Trial 1, immediate recall
  - RAVLT delayed recall (5 minutes)
  -- Verbal Fluency (Animal Naming)
- Mental Alternations Test
  - Response rate 62.3%
CCHS Validation work

- CCHS- Healthy Aging (2009)
  - Response rate 62.3%
  - RAVLT Trial 1, immediate recall – 85.9%
  - RAVLT delayed recall (5 minutes) – 75.5%
  - Verbal Fluency (Animal Naming) – 92.6%
  - Mental Alternations Test – 90.0%
CCHS Validation work

- CCHS- Healthy Aging (2009)
  - Analytic approach
    - T-scores controlling for age, sex and education
    - T-scores assigned (5 categories)
    - Stratum-specific likelihood ratios
    - Multinomial logistic regression
    - Subgroup analyses
      - 45-64 years; 65 +
      - English, French
CCHS Validation work

- CCHS- Healthy Aging (2009)
  - Categories of cognitive functioning can be described in CCHS
  - Cognitive functioning not associated with depression
  - Cognitive functioning not associated with presence of vascular disorders
  - Cut-point for impairment may underestimate prevalence
Cognition in the context of the CLSA

• Process and selection of cognitive measures
  – Cognitive aging
  – Age-associated cognitive disorders
  – Requisite for adaptive functions

• Domains
  – Memory
  – Executive Functions
  – Psychomotor Speed
Cognition in the context of the CLSA

• Opportunities
  – Cognition at baseline
    • Description of sample
  – Cognition over time
    • Precursor
    • Mediator
    • Outcome
  – Cross-study comparisons and integration
Cognition in the context of the CLSA

• Challenges
  – Brevity, and characteristics of the measures
  – Nature of the measurement
  – Context of the study

• Overcoming the challenges
  – CCHR validation work
  – The future!