

Development and Validation of the Working Memory Self-Assessment Scale

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INTRODUCTION

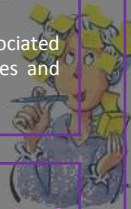
• **Working memory** is dedicated to the simultaneous storage and manipulation of cognitive representations in order to complete **complex activities** like, for example, mental calculation. There are strong relationships between working memory and **executive functioning** (i.e. the cognitive system that ensures the adaptation to new situations).

• Because working memory is involved in many daily life activities, its **ecological evaluation** is a key dimension of the neuropsychological assessment of people with cognitive impairments.

• Numerous studies show that **aging** is associated with a decline in working memory capacities and executive functioning.

AIM OF THE STUDY

1. Develop a **French self-assessment scale of working memory**.
2. Examine the **psychometric properties** of this new scale.



METHOD

PARTICIPANTS

- 19 Young (18 – 30 years)
- 20 Old (60 – 74 years)
- 20 Old-Old (75 – 90 years)

WORKING MEMORY SELF-ASSESSMENT SCALE (WMSS)

- 30 items
- 6-points Likert scale (“Never” to “Always”)
- e.g. “Mental calculation is difficult for me.”

COGNITIVE TASKS

Storage	Digit Span (Wechsler, 2000) + Block taping test (WMS-R; Wechsler, 1991) : forward modality
Dual-task	Brown-Peterson Paradigm (Meulemans et al., 2007)
Access	Word fluency (Cardebat et al., 1990)
Inhibition	Incompatibility test (Zimmermann et al., 2009) + Stroop Paradigm (Godefroy et al., 2008)
Shifting	Trail Making Test (Godefroy et al., 2008) + Adaptation of the Plus-Minus task (Miyake et al., 2000)
Updating	PASAT (Meulemans et al., 2003) + Working memory test (Zimmermann et al., 2008)
Multi	Arithmetic test (Wechsler, 2000); Letter-Number Sequencing (Wechsler, 2001) + Digit Span (Wechsler, 2000) + Block taping test (WMS-R, Wechsler, 1991) : backward modality
Selectivity	D2 test (Brickenkamp, 1998)

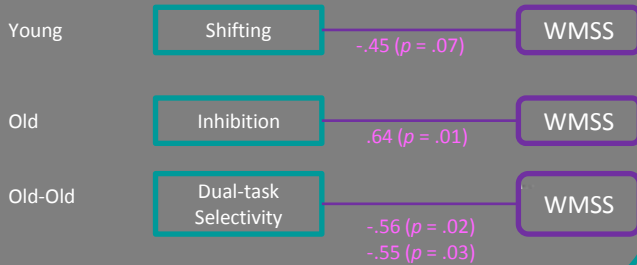
RESULTS

INTERNAL VALIDITY

The internal validity of the WMSS was strong as estimated by the Cronbach’s alpha coefficient ($\alpha = .93$)

EXTERNAL VALIDITY

The external validity was assessed through partial correlations (controlling for years of education, Mill Hill score, and Mattis score) between the WMSS and the eight composite scores.



DISCRIMINABILITY

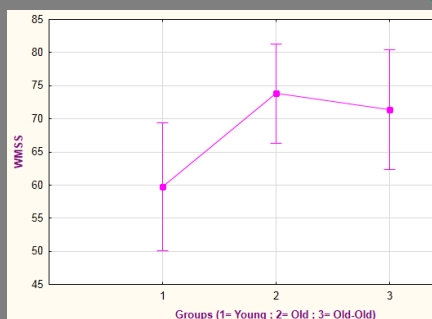
ANCOVA

(COV : years of education; Mill Hill score ; Mattis score)

$F(2) = 2,48$ ($p = .09$)

Planned comparisons
Old > Young

$F(1) = 4,96$ ($p = .03$)



DISCUSSION

Internal validity: The WMSS shows an adequate internal consistency.

External validity

Old group: Better executive abilities are associated with a greater reliance on internal memory strategies (Bouazzaoui et al., 2010); a more complex life style (McDaniel et al., 2008); and an increased perception of cognitive changes (Kliegel & Zimprich, 2005), which in turn can exacerbate the sense of unease and leads to an increase in complaints for old people with better cognitive capacities.

Young and Old-Old groups: The observed correlations are congruent with the hypothesis of a substantial involvement of multitasking capacities in everyday life activities (Marcotte & Grant, 2010).

Discriminability: There is a tendency to more cognitive complaints in the old group compared to the young one. Therefore, while having the poorest cognitive results, old-old people do not express more memory difficulties.

This result can be explained by the SOC model (Baltes & Baltes, 1990). Old-old people tend to reduce their activities and use more external (compensatory) strategies.

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