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Comparing the Cognitive Screening Tools MMSE and SLUMS

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MMSE and SLUMS as Measures of Cognitive Impairment

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Introduction

- ▶ Mini-Mental State Examination (MMSE)
 - One of the most widely used neuropsychology tests and dementia screening tool.
 - Many practitioners have used MMSE scores to recommend treatment options, but are unsure how SLUMS scores compare to those well-known cut-off scores.

Introduction

- ▶ Limitations of MMSE
 - Rigid reliance on specific cut-off scores can lead to errors in diagnosis
 - Patients with higher MMSE scores can show significant cognitive impairment when given more sensitive tests

Introduction

- ▶ Saint Louis University Mental Status (SLUMS)
 - Better tests for aphasia
 - Five items to remember instead of three (MMSE)
 - Clock drawing already built-in
 - Psychometrically superior

Introduction

- ▶ Cognitive Reserve
 - May cover up neuropathophysiology of dementia

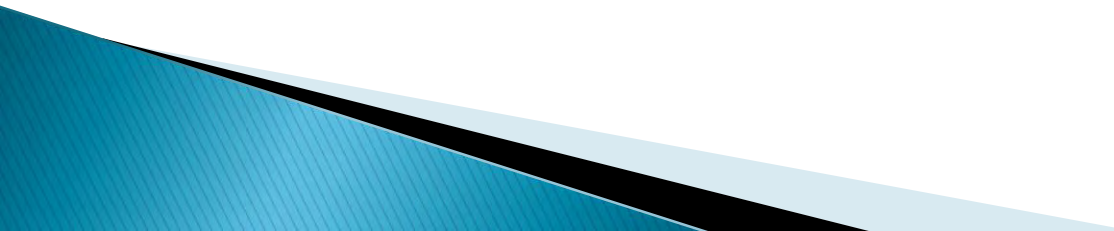
Introduction

- ▶ Shiroky, J.S., Schipper, H.M., Bergman, H., & Chertkow, H. (2007):
 - 3 patients scored 30 at time of diagnosis; 5 patients able to score 30 on follow-up administration.
 - 5 of the 27 patients scored 27 or higher with diagnosis of mild AD.
 - “Normal functioning” scores on MMSE were seen with lower scores on many other assessment tools used in this study.

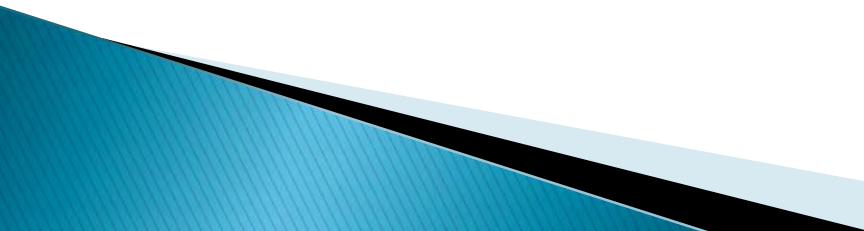
Introduction

- ▶ Molinuevo, J.L., Berthier, M.L., & Rami, L. (2011):
 - Found patients with more mild AD (MMSE \geq 21) responded better than those with severe AD in terms of language, IADLs (e.g., using telephone)
- ▶ Raji, Tang, Heyn, Kuo, Owen, Singh, & Ottenbacher (2005):
 - Mental status screening using SLUMS detected 60% more cases of mild cognitive impairment when compared to MMSE.
 - Significant correlations found between MMSE and SLUMS.

Objective

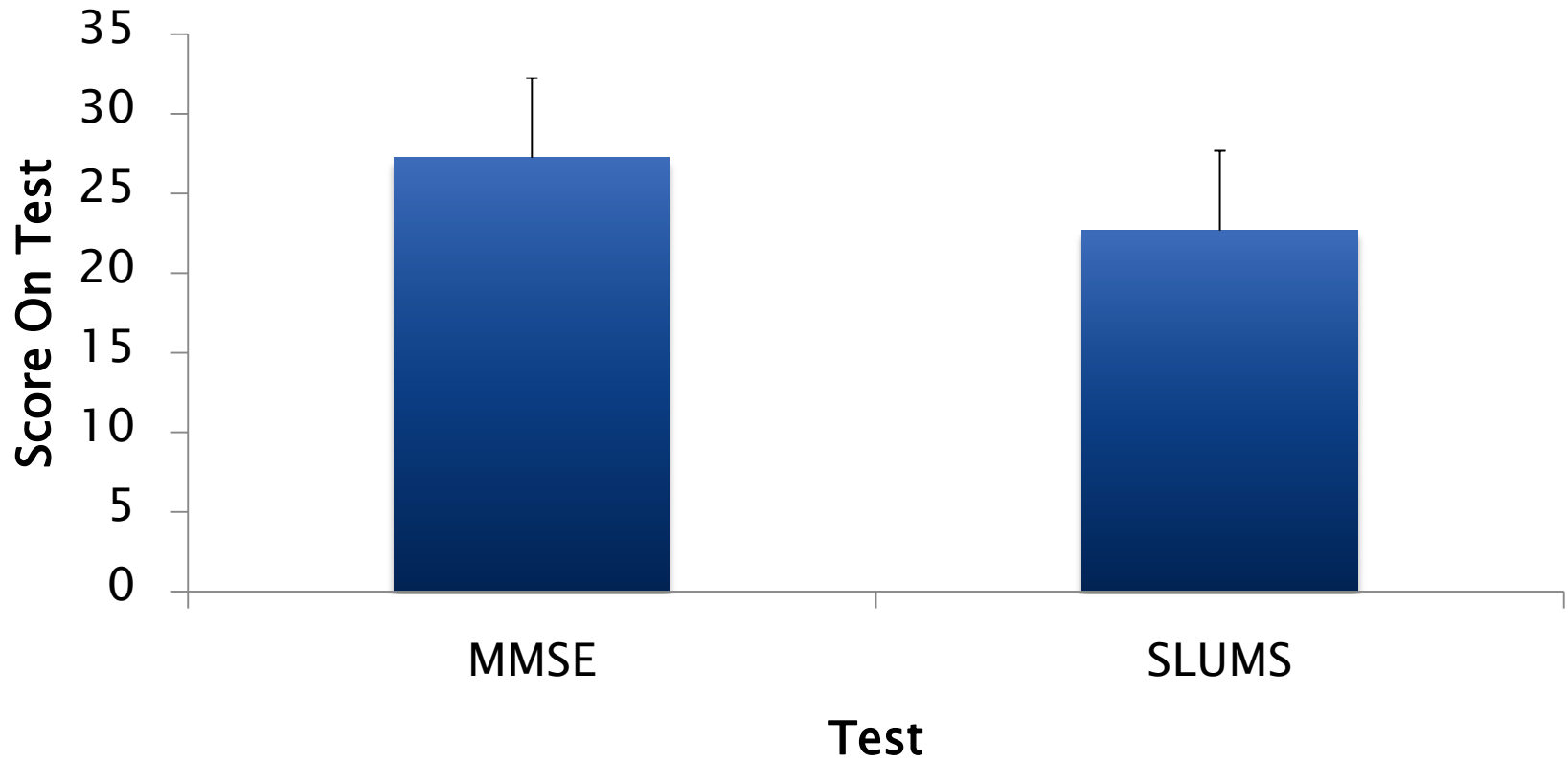
- ▶ **Establish norms** to provide practitioners with a direct method of converting and comparing MMSE and SLUMS scores.
 - ▶ **Cognitive reserve**, defined as years of education, would show a difference between MMSE and SLUMS scores.
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Methods

- ▶ Collected data from variety of independent and non-independent living environments.
 - ▶ Total of 118 participants with an average age of 80.03 (SD=8.71).
 - ▶ Participants had an average educational attainment of 14.97 years (SD=2.68).
 - ▶ Each participant was given both the MMSE and SLUMS .
 - Test order counterbalanced to minimize testing bias.
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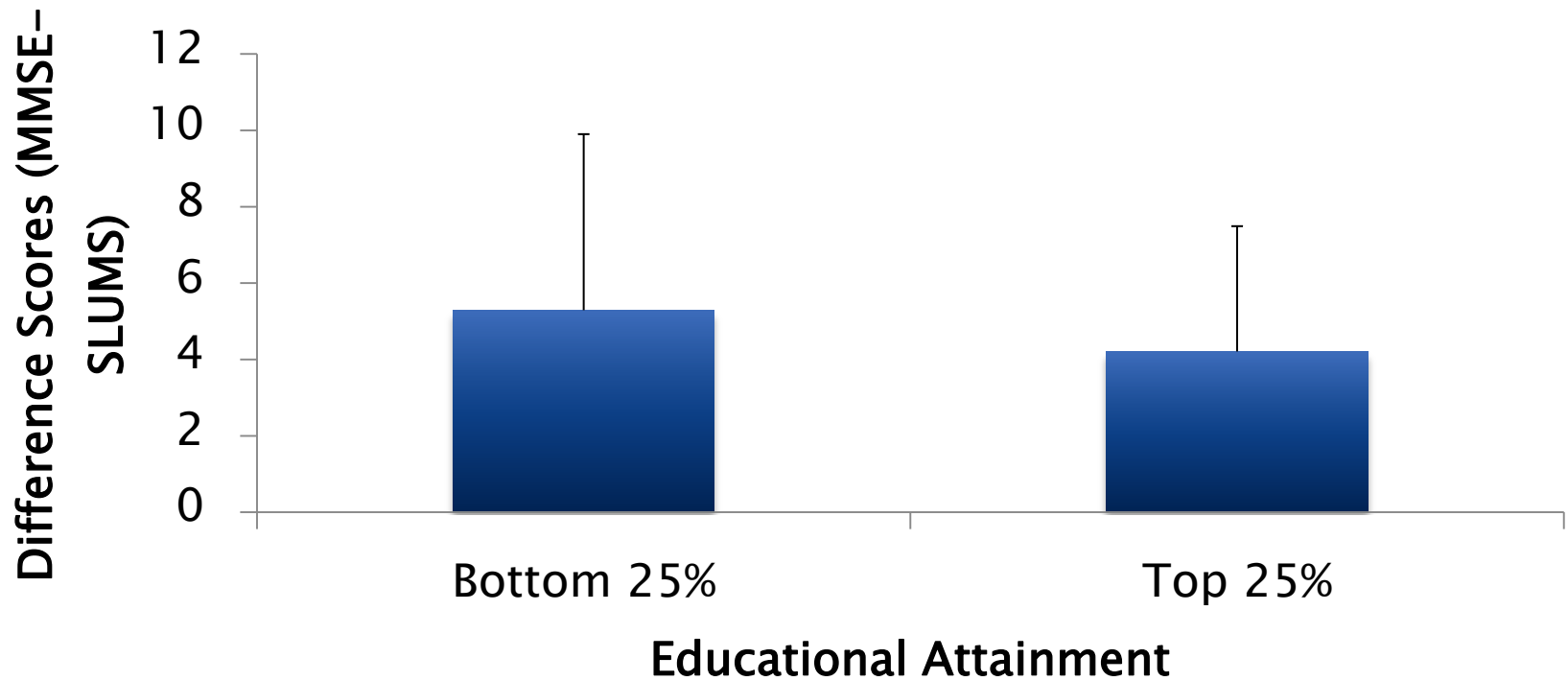
Results

All Participants

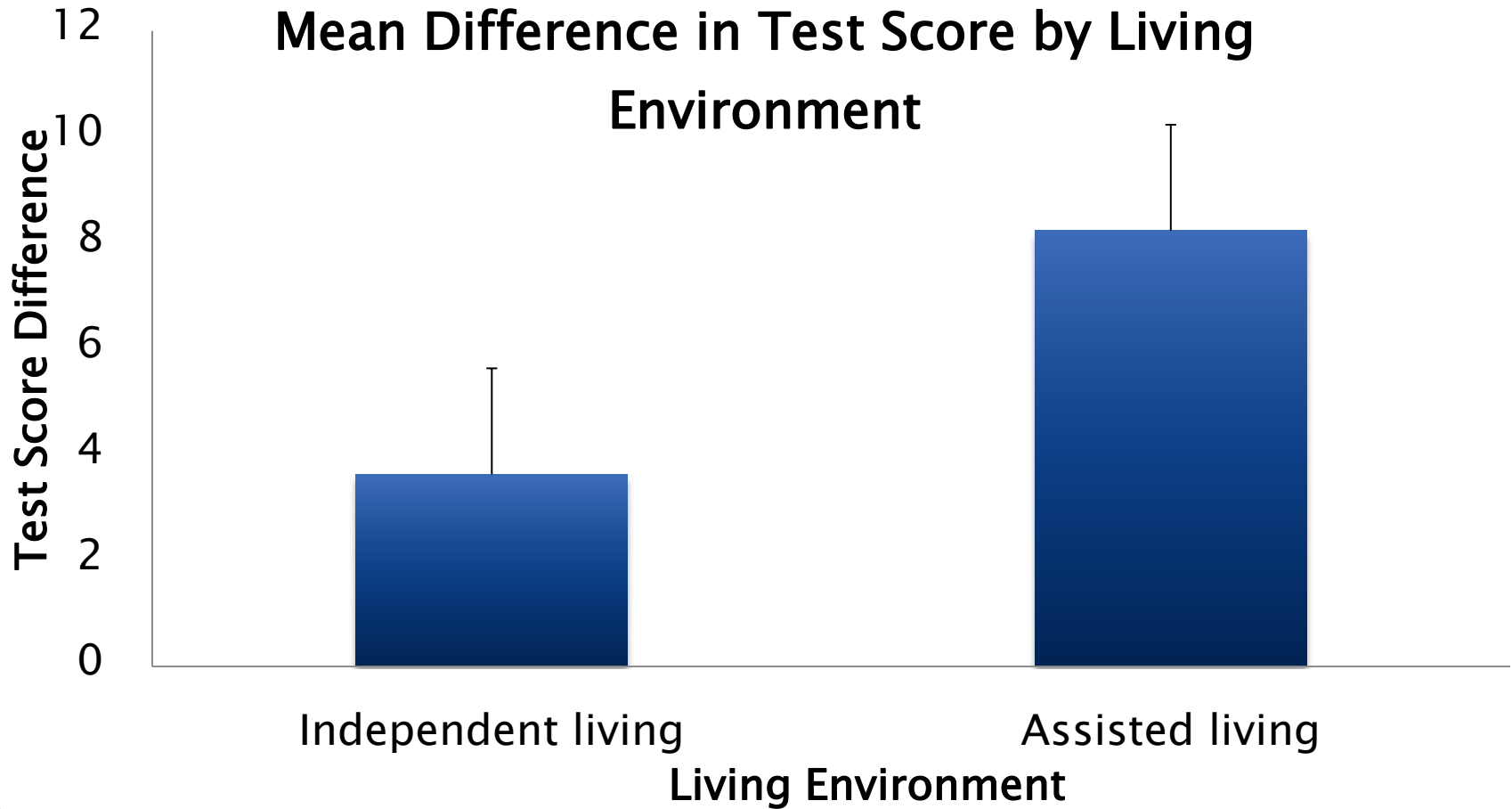


Results

Comparison of Top and Bottom Quartiles of Educational Attainment



Results



Results

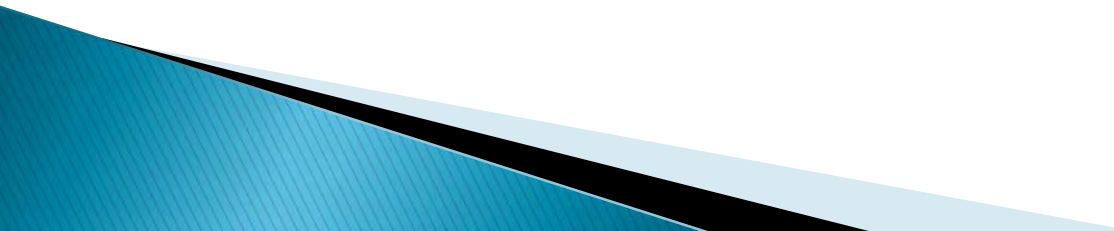
Average MMSE and SLUMS scores as a function of living environment

Living Environment	MMSE	SLUMS
Assisted Living	23.55	15.32
Independent Living	28.03	24.41
Skilled Nursing	29.00	24.00
Other	29.00	23.50

Conclusions & Implications

- ▶ It may be SLUMS is more sensitive at detecting cognitive impairments when people are in mild cognitive impairment range.
- ▶ We did not find evidence to support our cognitive reserve hypothesis.
- ▶ Practitioners can now convert SLUMS and MMSE scores with our observation that there is an average difference of 4.56
 - SLUMS is lower score.

Limitations

- ▶ Education levels may be higher than average.
 - ▶ A more representative sample of relevant demographic variables is needed.
 - ▶ There may have been a selection bias in the type of people who volunteered for this study.
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References

Molinuevo, J.L., Berthier, M.L., Rami, L. (2011).

Donepezil provides greater benefits in mild compared to moderate Alzheimer's. *Archives of Gerontology and Geriatrics*, 52 (1), 18–22. doi: 10.1016/j.archger.2009.11.004

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