

A Cross-Validation Study of Memory and Non-Memory Measures with Spanish-Speaking Older Adults

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INTRODUCTION

- ❖ Alzheimer's disease (AD) affects nearly 55 million individuals worldwide, a number expected to triple by 2050.
- ❖ Early and accurate memory assessment is essential to detect prodromal cognitive impairment, making neuropsychological testing crucial for diagnosing AD and related dementias (Alzheimer's Association, 2021; WHO, 2021).
- ❖ In the United States, underrepresented groups are at a higher risk for developing dementia, particularly Hispanics, the largest and fastest-growing minority group (CDC, 2018).
- ❖ Widely used measures have been developed and validated with predominately English-speaking Non-Hispanic Whites, limiting their applicability to diverse cultural/linguistic groups (Brooks & Loewenstein, 2010; Cherner et al., 2007; Manly, 2005).
- ❖ The aim of this study was to evaluate the clinical utility of the Spanish versions of memory vs. non-memory instruments in a Spanish-speaking sample; specifically, the comparative performance of the English versions in amnesic MCI (aMCI) and cognitively unimpaired (CU) elders.

METHODS

Diagnostic classification:



White Non-Hispanic (WNH)

CU

n=158

aMCI

N=101

Hispanic (His)

CU

n=103

aMCI

n=98

ANCOVA to assess differences in test performance between the four groups across languages after adjusting for age, sex, and education

Procedure:

Memory Measures

- HVLT-R Immediate & Delay
- NACC Passage Immediate & Delay

Non-Memory Measures

- Trail-Making Test A & B
- Category Fluency (Animals, Vegetables, & Fruits)
- Phonemic Fluency (FAS)

Table 1. Demographic Information of Study Participants (N= 460)

	Non-Hispanic English-Speaking CU (n=158)	Hispanic Spanish-Speaking CU (n=103)	Non-Hispanic English Speaking aMCI (n=101)	Hispanic Spanish-Speaking aMCI (n=98)
Age	71.98 ^b (SD=7.6)	69.60 ^c (SD=6.5)	74.53 ^b (SD=8.8)	74.46 ^{ab} (SD=6.3)
Years of Education	16.04 ^b (SD=2.7)	15.50 ^b (SD=2.9)	15.43 ^b (SD=3.6)	12.80 ^a (SD=3.8)
MMSE	29.01 ^a (SD=1.2)	28.71 ^a (SD=1.3)	27.28 ^b (SD=1.9)	26.76 ^b (SD=2.1)
Sex (%)				
Male	33.5%	25.0%	54.5%	34.7%
Female	66.5%	75.0%	45.5%	65.3%

RESULTS

Memory Measures

- CU older adults were statistically differentiated from aMCI counterparts regardless of language
- No significant differences between aMCI groups
- No significant differences between CU groups

Non-Memory Measures

- WNH-CU older adults outperformed His-CU counterparts on Trails A-B and fluency tasks
- WNH-aMCI participants scored higher than His-aMCI participants on Trails B

Table 2. Descriptive statistics of performance on memory and non-memory measures with aMCI versus CU in Spanish- and English-speaking groups

	Non-Hispanic English-Speaking CU (n=158)		Hispanic Spanish-Speaking CU (n=103)		Non-Hispanic English-Speaking aMCI		Hispanic Spanish-Speaking aMCI	
	Mean	Std Error	Mean	Std Error	Mean	Std Error	Mean	Std Error
HVLT-R Total	24.176	.363	24.063	.458	18.055	.462	18.301	.487
Immediate Recall								
HVLT-R Delay	8.009	.241	7.652	.304	3.276	.309	3.208	.324
Recall								
NACC Passage	13.368	.307	13.570	.388	9.028	.388	9.584	.414
Immediate Recall								
NACC Passage	12.093	.317	12.097	.400	6.814	.399	7.393	.426
Delay Recall								
Trail-Making Test	35.098*	1.431	49.588*	2.003	47.623	1.825	54.624	2.473
A								
Trail-Making Test	88.676*	4.610	126.283*	6.421	140.659*	5.946	174.808*	8.330
B								
Category Fluency	19.349	.371	17.713	.526	15.388	.472	14.956	.646
– Animals								
Category Fluency	46.951*	.815	40.925*	1.135	37.968	1.265	36.454	1.429
– Total								
Phonemic Fluency	40.644*	.987	32.985*	1.303	35.535	1.472	29.965	1.666

Note: * denotes significance at the .05 level when comparing pairwise to similar diagnostic groups across languages (CU vs CU; aMCI vs aMCI).

CONCLUSIONS

- ❖ The current findings indicate that memory measures experience less bias when employed among different linguistic/cultural groups regardless of cognitive status.
- ❖ In contrast, His-CU groups scored lower on all non-memory measures when compared with WNH counterparts. Trails-B evidenced bias for both His-CU and aMCI, making this a measure that requires the judicious use of appropriate norms.
- ❖ Strengths of this study include having a large sample size, the use of a well-validated cross-culturally diagnostic tool to classify individuals into groups, and statistical consideration of demographic variables.
- ❖ Future work would benefit from including MRI and amyloid PET data to gain a better understanding of the etiological underpinnings of our aMCI groups.
- ❖ Due to the growing Hispanic older adult population, and the lack of validated assessments that are culturally fair and generalizable across different cultural, ethnic, and linguistic groups, it is imperative that the field continues to study diverse populations to further understand how culture, acculturation, ethnicity, and language play a role in neuropsychological performance.

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