

Introduction

Vocabulary tests are widely used to estimate premorbid verbal intelligence and often serve as stronger predictors of cognitive test performance than education level or other demographic variables. The California Cognitive Assessment Battery (CCAB) includes an adaptive staircase vocabulary test in English. This poster describes the development of an equivalent measure for CCAB-Español, the Spanish-language version of the CCAB. Preliminary data suggest that scores on the CCAB-Español vocabulary test are strong predictors of overall performance across the Spanish battery.

Methods

The CCAB-Español vocabulary task was adapted from the English version of the California Cognitive Assessment Battery (CCAB) to ensure linguistic, dialectal, and cultural appropriateness for Spanish-speaking populations.

Target words were selected by a team of native Spanish-speaking neuropsychologists using frequency ranges derived from the **CORPES XXI (2021)** and **Corpus del Español** databases. Word selection emphasized cross-dialectal relevance, with attention to regional variation in usage. To accommodate greater linguistic diversity, the lower boundary of the test floor was extended, allowing for broader applicability across Spanish-speaking populations.

Task: The test consists of 24 adaptive trials drawn from a pool of 300 target words spanning 48 difficulty levels. On each trial, participants are presented with a stimulus word and four possible definitions (one correct, three foils) (Figure 1.). All participants begin at level 16, and item difficulty adjusts based on performance using a variable-step staircase procedure.

Participants: Participants (n=126; age 18-79; 60% women, 22% Central American, 3% Caribbean, 4%Spanish, 29% Mexican, 26% South American, 10% other, 5% did not respond) completed the CCAB-Español vocabulary task

Technology: Test instructions were presented with text-to-speech voices in a Mexican dialect. Participant's Test were administered in participants' homes and remotely monitored by Spanish-speaking examiners. Verbal tasks were objectively scored using Consensus Automatic Speech Recognition (CASR). Selected tests were administered twice to assess test-retest reliability.

Figure 1:
Example of how
Vocabulary test
stimuli is
presented

obligar

asumir

repetir

imponer

negar

Results

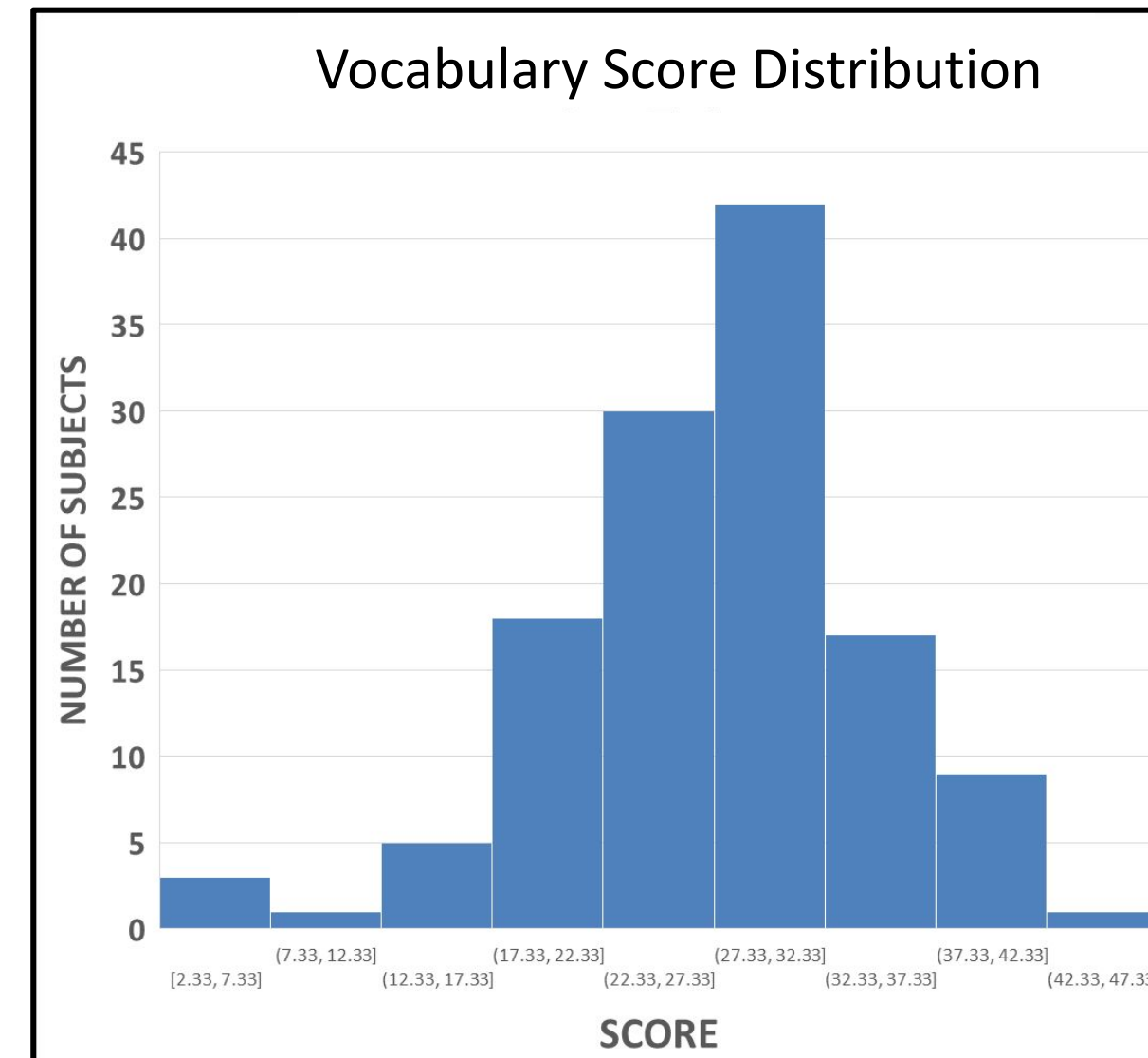


Figure 2:
Vocabulary
score
distribution
for 126
spanish
speaking
subjects

Correlations	Spanish	English
Age	$r = 0.25$	$r = .29$
Education	$r = .38$	$r = .45$
SES	$r = .33$	$r = .14$

Table 1:
Correlation
between
selected
variables vs.
Vocabulary
for Spanish
and English
batteries

Figure 3:
Vocabulary
levels across
mean subject
ages

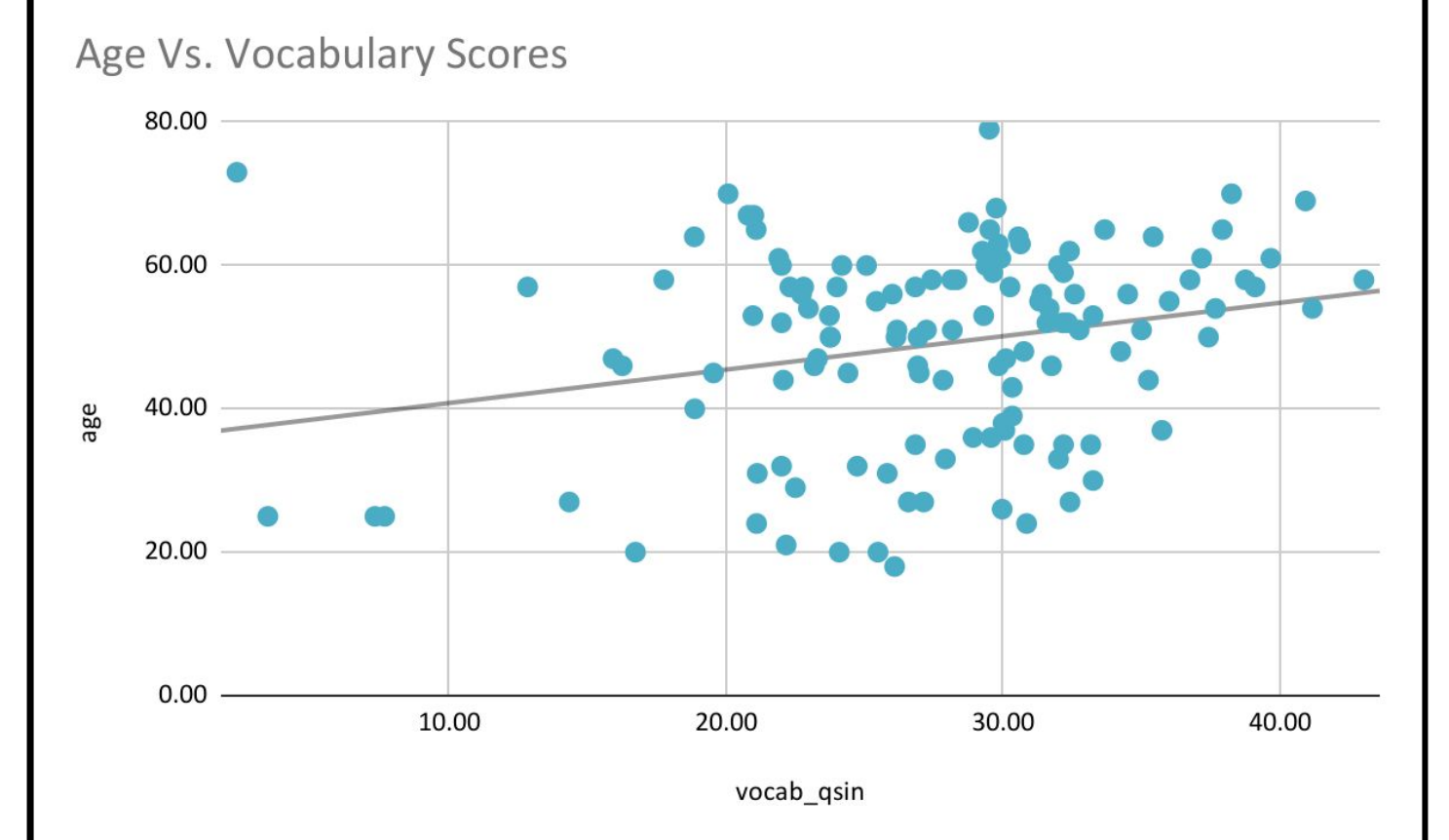
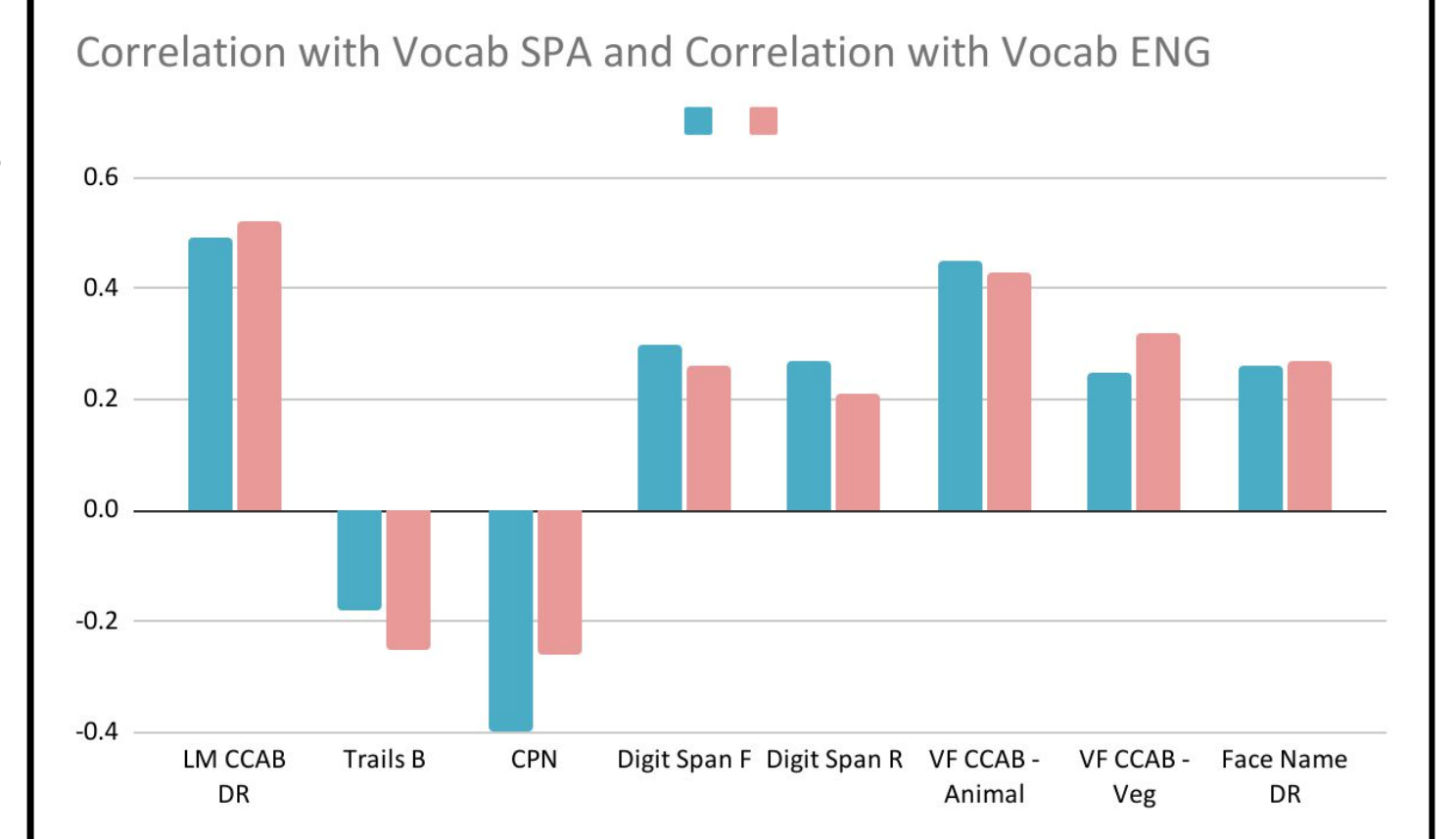


Figure 4:
Vocabulary
performance as
a predictor of
cognitive task
performance
across both
Latino-Spanish
and
Latino-English
groups.



Summary

Results: Preliminary data indicates the CCAB-Español vocabulary test is a strong predictor of overall performance on the Spanish battery with similar influences of vocabulary scores as in the English version of the CCAB (Figure 4)

Duration: (M=4.3 minutes) during the course of normative data collection.

Correlations: Data shows normal distribution similar to the data seen in the English version, with similar correlations with age (+0.25), Education (0.38) and also SES quick (0.33).

Discussion

Vocabulary is a key measure of premorbid intelligence and is a stronger predictor of performance than education. CCAB-Español's vocabulary test design incorporates linguistic and dialectal differences to ensure its broad applicability across Spanish-speaking regions.

References

- [1] McDonough, I. M., Bischof, G. N., Kennedy, K. M., Rodrigue, K. M., Farrell, M. E., & Park, D. C. (2016). Discrepancies between fluid and crystallized ability in healthy adults: a behavioral marker of preclinical Alzheimer's disease. *Neurobiology of aging*, 46, 68–75. <https://doi.org/10.1016/j.neurobiolaging.2016.06.011>
- [2] Woods, D., et al. (2024) <https://doi.org/10.3389/fnhum.2023.1305529>

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