Background. US Latinos are 1.5 times more likely than non-Latino whites to develop Alzheimer's disease and related dementias (ADRD), with prevalence projected to increase 7-fold by 2060. The California Cognitive Assessment Battery (CCAB) is an automated, tablet-based battery with a validated Spanish-language protocol (CCAB-Español) designed to meet this need, but whether performance differences between Spanish- and English-language administrations reflect genuine cognitive impairment or testing-context effects remains unclear.

Methods. Spanish-language CCAB data (n = 168) were compared to data from English speaking Latinos across nine nonverbal tasks spanning executive function, processing speed, visuospatial ability, and working memory. Groups were equated using 1:1 nearest-neighbor matching on age, education, gender, and vocabulary, yielding 164 matched pairs (Spanish: Mage = 47.5, SD = 13.6; English: Mage = 47.2, SD = 13.5; groups balanced on all matching variables, all $p > .44$). Verbal tasks were analyzed separately.

Results. In matched samples, Spanish-language CCAB administration was associated with significantly slower performance on four tasks where execution speed is the primary performance driver: Trail Making A (d = 0.32), Design Fluency (d = 0.30), Spatial Span touch response time (d = 0.31), and Identical Pictures response time (d = 0.27; all $p < .05$). Tasks where cognitive demand or accuracy limits constrain performance showed no significant gaps: Trail Making B (d = 0.20), the TMB–TMA difference score (d = 0.09), Stroop interference (d = −0.23), Hidden Patterns (d = 0.08), and Spatial Span accuracy (d = −0.07). A figure drawing task with no speeded response requirement showed no language gap (d = −0.23), further supporting task-demand specificity.

Conclusions. After demographic matching, CCAB language-of-administration effects concentrate on measures where execution speed dominates performance, and are absent when cognitive demand or task difficulty constrains individual differences in speed. This pattern suggests observed score gaps reflect a testing-context speed effect rather than domain-specific cognitive impairment, accuracy and cognitive control measures were equivalent across language groups. These findings inform the development of speed-adjusted CCAB-Español norms and caution clinicians against interpreting Spanish-language response time differences as indicators of greater cognitive risk.