Population Norms of the tablet-administered Brief Assessment of Cognition

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Methodological Issue Being Addressed Digital cognitive assessments improve efficiency and standardization in evaluating cognitive impairment, a key feature of many CNS disorders. This study addresses this need by establishing normative benchmarks for the tablet-based Brief Assessment of Cognition (BAC). Normative data are useful to compare the performance of clinical groups or individuals to the general population and to adjust for the impact of demographic factors (age, sex etc.).

Introduction Cognitive impairment impacts daily functioning and quality of life across CNS disorders. The BAC offers a brief, standardized, semi-automated assessment of core cognitive domains via tablet. This study aims to generate normative data for the BAC using a large, demographically representative sample of healthy adults.

Methods A normative sample of 626 healthy adults (≥20 years) was recruited via local advertisements and stratified by age and sex to match U.S. Census demographics. Subjects qualified for the Healthy Normative Group if they were cognitively normal, as determined by a MoCA score ≥22 and if they did not present significant self-reported memory complaints as defined by the Cognitive Function Instrument (CFI) >4. Other exclusion criteria included non-English speakers, major psychiatric/neurological conditions, recent head injury, substance abuse, daily drug use, and cognition-impairing medications.

For each of six BAC subtests, multiple linear regressions were conducted using two covariate sets: (1) age and sex, and (2) age, sex, and education. Model diagnostics confirmed adequate linearity and normality. The detected heteroscedasticity was addressed using two methods: Box-Cox transformations and a linear model with explicit variance modeling. Following appropriate modeling, significance tests were performed on all covariates. Finally, predicted means and standard deviations were computed across all combinations of age (18–90), sex (Male/Female), and education (High/Low) to derive z- and t-scores for all subtests and the composite.

Results Age negatively predicted performance on most subtests—Verbal Memory, Token Motor, Verbal Fluency, Symbol Coding, and Tower of London ($p < 0.01$)—with a borderline effect for Digit Sequencing ($p = 0.06$). Sex was generally nonsignificant, except females outperformed males on Verbal Memory ($p < 0.01$). Education showed a positive effect across all subtests ($p < 0.01$), except Token Motor ($p = 0.07$).

Conclusion This study provides normative BAC data derived from a demographically representative sample of 626 healthy adults, enabling calculation of age- and sex-adjusted standardized scores (z- and t-scores) for individual subtests and the composite score. In some studies, education may be excluded as a covariate because illness-related cognitive deficits can truncate educational attainment, and adjusting for it risks removing relevant variance. Although the sample was geographically concentrated in Durham, North Carolina, its educational distribution closely approximates national patterns, supporting the generalizability of these norms.

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Keywords

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Guidelines I have read and understand the Poster Guidelines

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DS, MW and CAB are full-time employees of Clario. Clario owns and distributes the paper BACS and the tablet administered BAC.
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