# The Clinical Utility of the Neuropsychological Assessment Battery Screening Module for Schizophrenia-Spectrum Disorders

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## Introduction

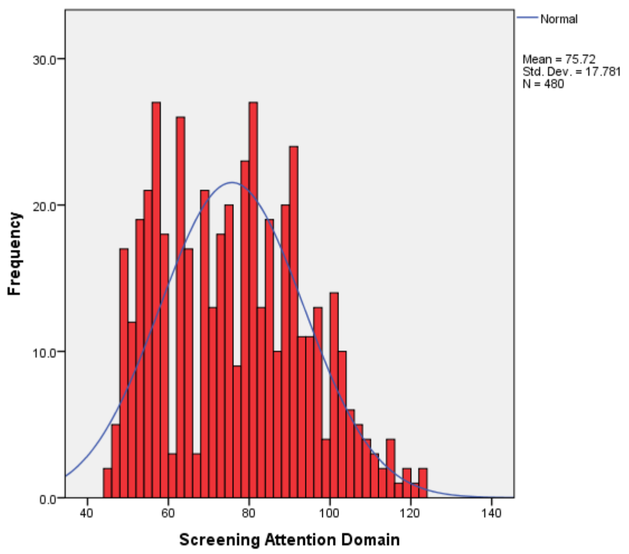
- Individuals with schizophrenia tend to exhibit compromised cognitive functioning, with neuropsychological test scores generally falling more than 1 standard deviation (SD) below the mean of healthy populations (Gold, 2004).
- In a meta-analysis of 204 studies indexing differences in normal controls versus individuals with schizophrenia, moderate to large raw effect sizes ($d$ > 0.60) were demonstrated for all 22 neurocognitive test variables, including global and selective verbal memory, nonverbal memory, bilateral and unilateral motor performance, visual and auditory attention, general intelligence, visuo-spatial ability, executive function, and language test performance (Heinrichs & Zakzanis, 1998).
- Because schizophrenia involves global cognitive deficits, neuropsychological assessment has played a prominent role in a) efforts to identify the pathological substrates of the syndrome, b) treatment planning, and c) evaluation of treatment response.
- A challenge in real-world settings is to utilize clinically useful measures that are feasible considering limited time and staffing resources. One common approach to this problem has been to administer screening tests to determine whether further assessment is needed.
- The Neuropsychological Assessment Battery (NAB) includes 5 screening domains, for which the publisher provides a specified range of standard scores indicating the need for further testing (White & Stern, 2003).
- The purpose of the present study was to evaluate the clinical utility of the Neuropsychological Assessment Battery Screening Module (S-NAB) for assessing cognitive functioning in individuals with schizophrenia.

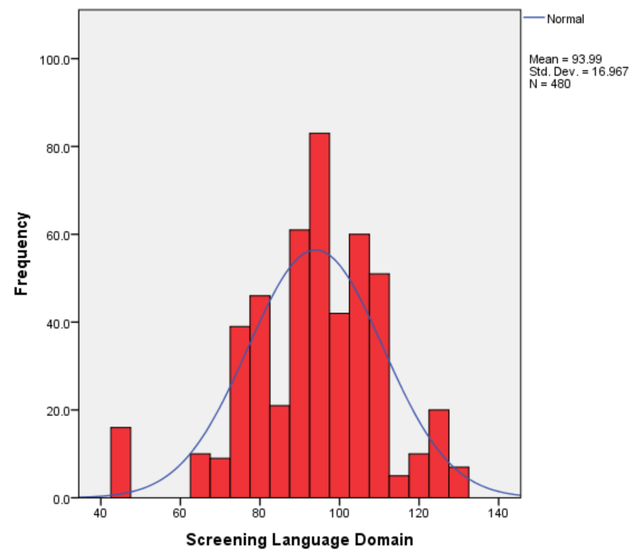
## Method

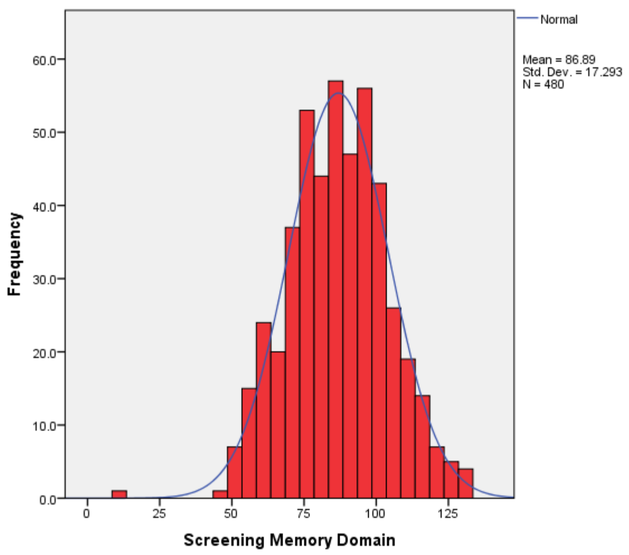
- **Participants.** Adults (N=280) diagnosed with a schizophrenia-spectrum disorder were recruited. Mean age was 42.52 (SD=12.10); men comprised 59% of the sample. The majority of participants were European American (N=240), 11 were African American, 9 were American Indian, 3 were Latino, and 1 was Asian American. The remaining patients did not report their race/ethnicity.
- **Measures.** The Neuropsychological Assessment Battery Screening Module (S-NAB): Screening Attention Domain (S-ATT), Screening Language Domain (S-LAN), Screening Memory Domain (S-MEM), Screening Spatial Domain (S-SPT), and Screening Executive Functions Domain (S-EXE).
- **Procedures.** Participants were administered all modules of the S-NAB on 1 or more occasion over a 5-year period (1 administration, N=280; 2 administrations, N=123; 3 administrations, N=61; 4 or more administrations, N=16).

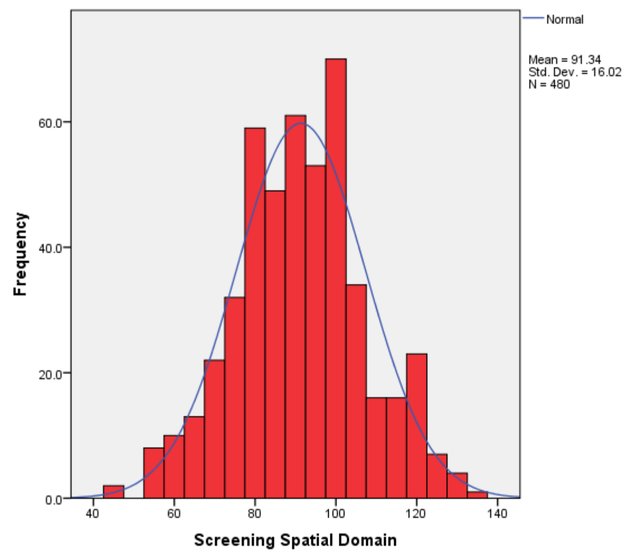
## Results

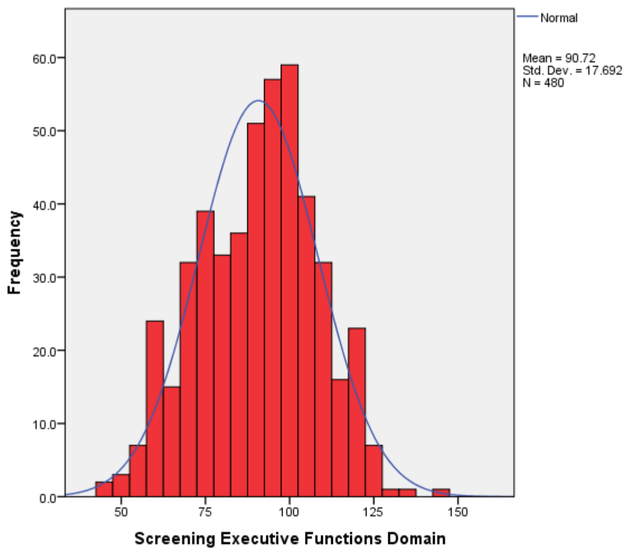
- Overall performance on the S-NAB (Total Screening Index; M=82.19, SD=16.81) reflected borderline impairment, although individual domain averages varied.
- Performance on the Attention Domain (S-ATT; M=74.97, SD=19.16) reflected mild impairment, consistent with the expected performance level for this population. However, performance was slightly higher than anticipated for all other domains: Language (S-LAN; M=93.99, SD=16.97), Memory (S-MEM; M=86.99, SD=17.29), Spatial (S-SPT; M=91.34, SD=16.02), and Executive Functions (S-EXE; M=90.72, SD=17.69).
- Possible practice effects were considered; however, mean scores did not change significantly when only the first S-NAB administration was analyzed.
- Using the test authors' recommendations, full administration of corresponding NAB modules was indicated in 43% of S-ATT administrations, 84% of S-LAN administrations, 70% of S-MEM administrations, 81% of S-SPT administrations, and 72% of S-EXE administrations.

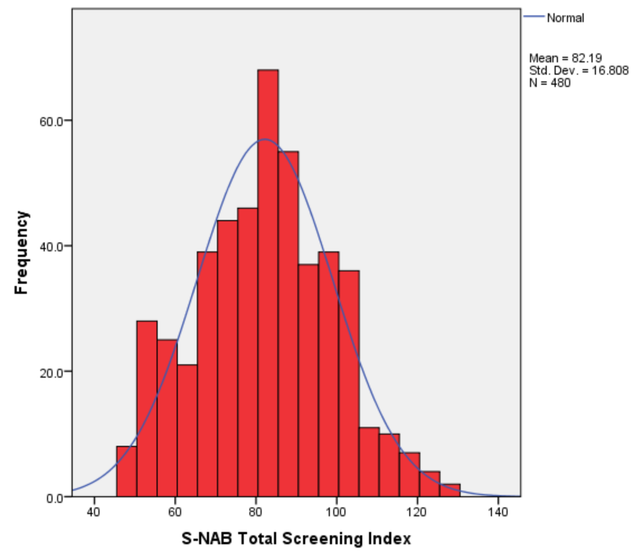



## Discussion

- The higher-than-anticipated mean scores for the Language, Spatial, and Executive Functions Domains suggests limited sensitivity to impairments common among individuals with schizophrenia. However, mean performance on the Screening Memory Domain falls in the lower end of the average range (nearly borderline impaired), indicating greater sensitivity than that of the aforementioned domains. Of the five domains within the S-NAB, only the Screening Attention Domain fell within the expected performance range.
- Overall, utility of the full S-NAB for individuals with schizophrenia may be limited by inadequate sensitivity in most of its screening modules.
- The test authors provide a range of scores for each domain indicating the need for further assessment. However, use of these guidelines for the current sample yields a substantial proportion of individuals for whom administration of the full NAB module is recommended. These ranges may need to be adapted in order to enhance the use of the S-NAB as a screening instrument for people with schizophrenia.

**References**

Gold, J. M. (2004). Cognitive deficits as treatment targets in schizophrenia. *Schizophrenia research, 72*(1), 21-28.

Heinrichs, R. W., & Zakzanis, K. K. (1998). Neurocognitive deficit in schizophrenia: a quantitative review of evidence. *Neuropsychology, 12*, 426-445.

White, T., & Stern, R. A. (2003). *NAB, Neuropsychological Assessment Battery: Psychometric and Technical Manual*. Lutz, FL: Psychological Assessment Resources.