Development of the Nonverbal Test of Cognition for Hospital Inpatients

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Introduction:

- Neuropsychological testing options are limited in inpatient hospital settings and for individuals who cannot speak (e.g., intubation)
- Collecting normative data on vulnerable populations should be guided by preliminary evidence that tests are tolerable and sensitive to cognition
- We designed a screening tool that does not require verbal responses from patients

Methods:

- This tool was administered to people with epilepsy (PWE) on an epilepsy monitoring unit
- PWE were able to speak, but were asked to respond to prompts by pointing or gesturing only

Table 1. Demographics

Characteristic	N/Mean (SD)
Sample Size	13
Age	35.4 (14.5)
% Male	54
Education	13.3 (2.8)

Main Findings: Among PWE, the tool was well-tolerated, no one withdrew, and average administration time was **16 minutes**. There were *no floor effects* observed; however, *ceiling effects* were present for four subtests: Auditory Attention 1, Simple Verbal Commands, Object Memory Delay, and Orientation, two of which were expected. The overall test was challenging for PWE, suggesting it has sensitivity to cognitive functions.

Future Directions: Preliminary data support collection of normative data and collection of data to determine whether the test distinguishes between those with and without cognitive impairment. Research is ongoing on this screening tool and an outpatient version to determine performance relative to standard neuropsychological tests and assess the psychometric properties.

Table 2. Test Performance

Test	Possible Score	Mean Score	SD	Maximum Z	Minimum Z	Minimum %ile
Digits Forward	12	7.92	2.14	1.91	-3.70	0.0
Digits Backward	12	4.15	1.86	4.21	-2.23	1.3
Behavioral Memory Delayed	4	3.00	1.63	0.61	-1.84	3.3
Object Learning	24	20.46	2.63	1.34	-7.77	0.0
Auditory Attention 1	10	9.77	0.44	0.53	-22.28	0.0
Auditory Attention 2	6	4.77	1.79	0.69	-2.67	0.4
Orientation	8	7.46	0.88	0.61	-8.51	0.0
Object Memory Delay	8	7.92	0.28	0.28	-28.57	0.0
Verbal Commands – Simple	6	6.00	0.00	-	-	-
Verbal Commands – Complex	6	4.92	1.26	0.86	-3.92	0.0
Total	96	55.92	6.76	5.93	-8.27	0.0

Frequency Distributions