

Diagnostic Validity of a Video-Adapted Version of the NACC UDSv3 Cognitive Battery in Older Adults with and without Cognitive Impairment

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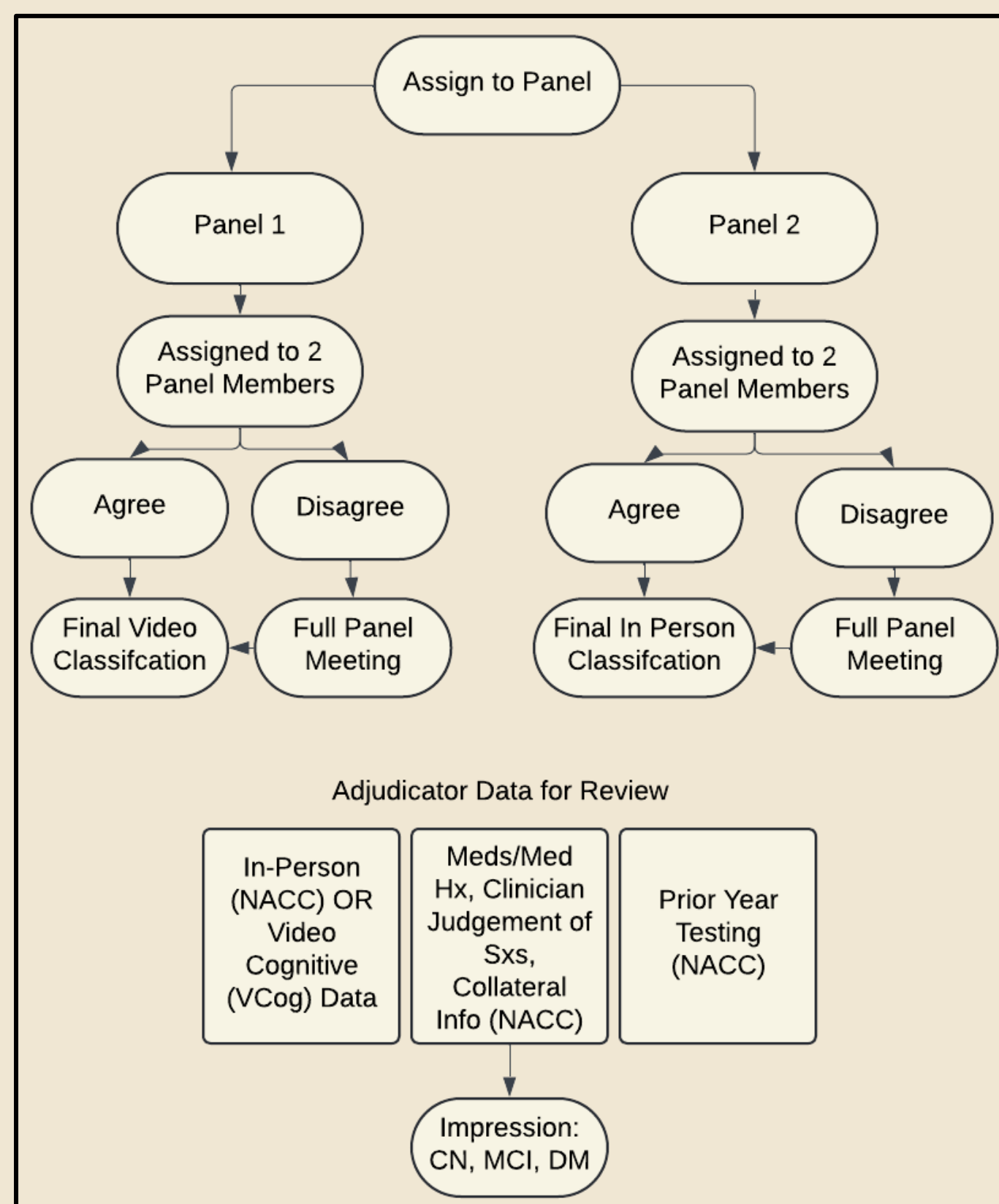
Background

- The VCog study previously demonstrated the feasibility and acceptability¹ of a video-adapted version of the NACC UDSv3² cognitive assessment battery.
- Strong concurrent validity compared to in-person administration has also been demonstrated.³
- Here we present a comparison of cognitive adjudication classifications by experts using cognitive data obtained in-person or via video in an ADRC sample with either normal cognition (NC), mild cognitive impairment, or mild dementia (DM).

Subjects & Methods

- 454 participants across 12 ADRC completed video and in-person cognitive assessments** within 4-8 weeks of one another, in randomized fashioned.
- Once video and in-person assessments were both complete, data were reviewed independently by a panel of experts, included a psychologist, a geriatrician, and a neurologist with expertise in diagnosis of mild cognitive impairment and dementia.
- Both panels **reviewed a mix of in person and video data**, but not for the same participant. Panels were blinded to data and diagnoses of the other panel (Figure 1).
- Data from the most recent in person proxy visit was made available to both panels to assist with determining functional impairment.

Figure 1. Adjudication Procedures



Measures

Table 1. Cognitive Battery Composition

Form Type	Measure
Unmodified UDSv3 Measures	Craft Story – Immediate & Delayed Recall, Category Fluency, Verbal Fluency, GDS-15
*Modified' UDSv3 Measures	MoCA, Benson Figure Immediate & Delayed Recall, Multilingual Naming Test
Substituted UDSv3 Measures	Oral Trail Making Test (OTMT)
Additional Forms	List learning test (RAVLT, CERAD, or HVLT-R), Technology Use Questionnaire, Experience Questionnaire

**Modifications involved use of screen sharing for test stimuli and the screenshot function to capture participant drawings. The A/V version of the MoCA was administered*

Results

Table 2. Characteristics of VCog participants undergoing adjudication by study entry cognitive status

	Total (N=454)	CN (N=156)	MCI (N=225)	DM (N=73)	P-value
Age; mean (SD)	75.6 (7.2)	74.1 (6.7)	76.5 (7.3)	76.3 (7.7)	<.01
Race (% non-white)	107 (24%)	41 (26%)	59 (26%)	7 (10%)	<.01
Sex (% female)	236 (52%)	99 (64%)	110 (49%)	27 (37.0%)	<.001
Education (yrs; mean (SD))	16.5 (2.5)	16.4 (2.3)	16.4 (2.6)	17.0 (2.5)	.21
MoCA; mean (SD)	23.8 (4.4)	27.2 (2.5)	23.1 (3.3)	18.5 (4.4)	<.0001
Visit order					.98
In-person first	229 (50%)	81 (52%)	112 (50%)	36 (49%)	
Video first	225 (50%)	75 (48%)	113 (50%)	37 (51%)	
Days between visits; Med. (min; max)	38.0 (16.0; 218.0)	36.5 (16.0; 200.0)	38.0 (26.0; 218.0)	41.0 (20.0; 185.0)	.46

- At baseline, cognitive groups differed significantly on mean age, race, sex, and MoCA, but did not display significant differences for years of education, visit order, or days between video and in-person assessments

Table 3. Diagnostic agreement when using video and in-person data

Adjudicated Diagnosis	(In-Person)		
	(1) CN (N=216)	(2) MCI (N=145)	(3) DM (N=81)
(Video)			
(1)CN	195 (90.3%)	38 (26.2%)	1 (1.2%)
(1)MCI	20 (9.3%)	100 (69.0%)	14 (17.3%)
(1)DM	1 (0.5%)	7 (4.8%)	66 (81.5%)

- Overall diagnostic agreement across modalities was substantial at 82% (**Kappa=.76** CI:.71,.81)
- No differences were identified by race/ethnicity, education, visit order, days between assessments, type of virtual device used, validity ratings by examiners, or occurrence of technical problems during testing.
- Of 81 (18%) disagreements, 53 (65%) were less severe when relying on video data; and most of these (n=38, 72%) were classified as CN when in-person data resulted in a diagnosis of MCI.
- Those participants tended to be older, male, and have quicker TMT times compared to calibrated OTMT times ($p < .05$).

Conclusions

- Earlier results demonstrated equivalence of most UDSv3 test scores across testing modalities and high user acceptability of video testing. These data show that there also is relatively high diagnostic agreement across modalities.
- However, modifications to the battery, including the substitution of OTMT for TMT, may have accounted for some participants being classified as less impaired with video testing due to differing measures of executive dysfunction.
- Other potential factors include use of aids during video testing and lack of qualitative data obtained with in person testing.
- With the video-adapted battery, ADRCs and other users may be able to reduce participant burden and access harder-to-reach individuals and underserved populations.

References

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