

Telephone Cognitive Assessment: Experience, Challenges, Strategies, & Next Steps

**Stephen Rapp, PhD, Bonnie Sachs, PhD, ABPP, and
Suzanne Craft, PhD**
Wake Forest Alzheimer's Disease Research Center



Agenda

- **Experience with telephone cognitive assessments**
- **Challenges & strategies**
- **Proposed modified UDsv3 telephone batteries**
- **Proposed next steps**

Wake Forest studies with telephone cognitive batteries

Women's Health Initiative Memory Study-Epidemiology of Cognitive Health Outcomes (WHIMS-ECHO, Rapp PI)

- N=2,962; age >70; 2008-2021; ~30 min; 18,000+ completed assessments
- Annual assessments: TICSm, East Boston Memory Test, Digit Span, Verbal Fluency-Animals, Oral Trail Making Test, EBMT-DR, TICSm WL LD, CVLT-3 learning trials, GDS-15, (optional Emo Distress Q), WHI Insomnia Scale
- Validation study: Rapp et al., 2012, JAGS;60:1616-1623.

Cocoa Supplement and Multivitamin Outcomes Study for the Mind (COSMOS-Mind, Baker/Espeland PIs)

- N=2200; >65 yoa; 2016-2021; ~45 min; 4000+ completed
- 3 assessments: Cog Change Index, TICSm, Logical Memory I, VF-F&L, Number Span, WHI Insomnia Scale, VF-Animals&Vegetables, Digit Ordering Test, Oral Trail Making Test, TICSm WL LD, Logical Memory II, GDS-15 (optional Emo Distress Q)

Wake Forest studies with telephone cognitive batteries

Women's Health Initiative Sleep Hypoxia Effects on Resilience (WHISPER, Baker PI)

- N=5000; mean age=82; 2017-2021; 45 min; 10,000+ completed
- 3 assessments
- Battery same as COSMOS-Mind

Systolic Blood Pressure Intervention Trial –Extension (SPRINT 2020, Reboussin, PI)

- N=7000; mean age ~73; pending (2020-2022); 40 min
- Telephone version of SPRINT battery

PREVENTABLE Study

The PRagmatic EValuation of evENTs And Benefits of Lipid-lowering in oldEr Adults (PREVENTABLE; N=20,000 adults >75 yoa)

- *Tests moderate intensity statin regimen vs placebo*
- *PCORnet and VA health systems*
- *Cognitive assessments not administered in clinic setting*
- *Challenge:*

Either train >150 persons w/ unknown testing experience

vs

Administer battery remotely (telephone) from CC

- *Proposed use of modified UDSv3 NP battery by telephone*

Challenges & Strategies

Challenge	Strategies
Ppt hearing acuity	<ul style="list-style-type: none">• Questions about hearing problems, aids,• Repeat sentence (“I have a dog, now all I need is a cat”)• Examiner rating of interference at session end
Examiner clarity	<ul style="list-style-type: none">• Headset with quality microphone• Train slightly slower speech, enunciation• Develop list of acceptable misses (e.g., Craft Story, AVLT)
Ppt ‘cheating’	<ul style="list-style-type: none">• Specific cues re clocks, calendars, computers, etc.• Instruct aids not permitted
Response capture	<ul style="list-style-type: none">• Audio-record session (scoring, discussion, training)

Challenges & Strategies

Challenge	Strategies
Norms	<ul style="list-style-type: none">• Use norms for conventional (in-person) assessment???• Develop.....
Contacting ppt; maximizing data capture	<ul style="list-style-type: none">• Reminder, Newsletter, Thank-you note• Allow ppt to (re)schedule to convenient time
Emotional distress	<ul style="list-style-type: none">• GDS-15 (>8) triggers 'Emotional Distress Questionnaire,' a series of Qs on suicidality• Triggered cases referred to Dr. Rapp for telephone follow-up

Proposed modifications to UDsv3 cognitive battery for telephone

UDsv3- Neuropsychological Battery	UDsv3-Tele (Core)	UDsv3-Tele (Core + Optional)
MoCA		<i>MoCA-Blind/Telephone</i> (Wittich et al., 2010)
Craft Story Immediate & Delay	Craft Story Immediate & Delay	Craft Story Immediate & Delay
Benson Complex Figure- Immediate & Delay	X	<i>Rey Auditory Verbal Learning Test</i> (Rey, 1964)
Number Span	Number Span	Number Span
Category Fluency (A&V)	Category Fluency (A&V)	Category Fluency (A&V)
Trail Making Test A & B	X	<i>Oral Trail Making Test</i> (Ricker & Axelrod, 1994)
Multilingual Naming Test	X	<i>Verbal Naming Test</i> (Yochim et al., 2015)
Verbal Fluency (F&L)	Verbal Fluency (F&L)	Verbal Fluency (F&L)
Geriatric Depression Scale (B6)	Geriatric Depression Scale (B6)	Geriatric Depression Scale (B6)

Current Status of ADRC T-Cog Assessments During COVID19 Hiatus

- **UC-Davis**
 - Craft story, Number Span, Category and Letter Fluency, CERAD Word List
 - Administered to ~30 participants (CN and MCI) in affiliated Khandle study, awaiting instructions re: ADRC cohort
- **Rush ADRC**
 - Long history of T-cog use in affiliated ROS-MAP studies ongoing
 - Story recall, category fluency, number span, number order
- **Wake Forest ADRC**

Wake Forest ADRC Pilot and Validation Studies

- **UDSv3 T-Cog Core and Supplemental tests administered to CC ppts with previous in person testing within 3 months to provide initial feasibility information**

DX	Age	Craft Im IP	Craft Im TC	Craft Di IP	Craft Di TC	CatFl Vg IP	CatFl Vg TC	DspF IP	DspF TC	DspB IP	DspB TC
CN	92	21 / 0.09	21 / 0.09	22 / 0.76	24 / 1.07	14 / -0.23	14 / -0.23	8 / 0.05	6 / -0.84	7 / 0.14	7 / 0.14
CN	72	22 / 0.16	25 / 0.63	18 / 0.01	16 / -0.31	14 / -0.25	16 / 0.25	6 / -0.73	5 / -1.18	4 / -1.18	3 / -1.65
CN	62	33 / 1.36	37 / 2.39	30 / 1.28	37 / 2.39	14 / -0.40	15 / -0.13	11 / 0.75	13 / 1.65	13 / 2.21	11 / 1.30
MCI-A	77	20 / 0.14	19 / 0.01	18 / 0.29	18 / 0.31	8 / -0.96	10 / -0.45	9 / 0.58	8 / 0.15	8 / 0.77	6 / -0.14
MCI-MDA	78	1 / -3.00	16 / -0.65	16 / -0.17	15 / -0.32	12 / -0.63	13 / -0.38	6 / -0.66	6 / -0.66	3 / -1.55	6 / -0.16
MCI-NA	68	30 / 1.33	30 / 1.33	28 / 1.47	29 / 1.62	13 / -0.58	10 / -1.33	5 / -1.22	6 / -0.78	7 / 0.14	6 / -0.32
AD	73	12 / -1.42	18 / -0.48	12 / -0.98	15 / -0.52	11 / -0.59	12 / -0.34	7 / -0.61	9 / 0.28	6 / -0.52	6 / -0.52

- **Initial observations: good concordance, CN and MCI enjoyed testing, 2/5 AD refused testing, some expected challenges (hearing issues and - gasp - possible cheating!)**

Next Steps

- **Initial feasibility and pre-validation study**
 - **Core battery or Core+Supplemental test battery administered to ~100 Wake Forest Clinical Core ppts via phone or video**
 - **Assess feasibility of both modalities, identify possible biases, advantages, design optimal battery/protocol**
 - **Convene experts, CTF, NIA, other interested ADRC investigators to design inter-ADRC validation study**
 - **Product of inter-ADRC validation study: psychometrically sound, normed T- and V-cog batteries that can be used for remote assessment**
 - **Aspirational goals to develop methods for 1) combining T/V-cog and in-person test data (ie, centiloid approach); 2) aligning ADRC data with ongoing large studies/trials (ie, PREVENTABLE)**

Thanks to ADRC CTF, Clinical Core Steering Committee, Nina, Cerise, and Wake Forest participants!

Questions?