

Does Routine Computer Use Affect Test Performance on Video-Administered Cognitive Tests?

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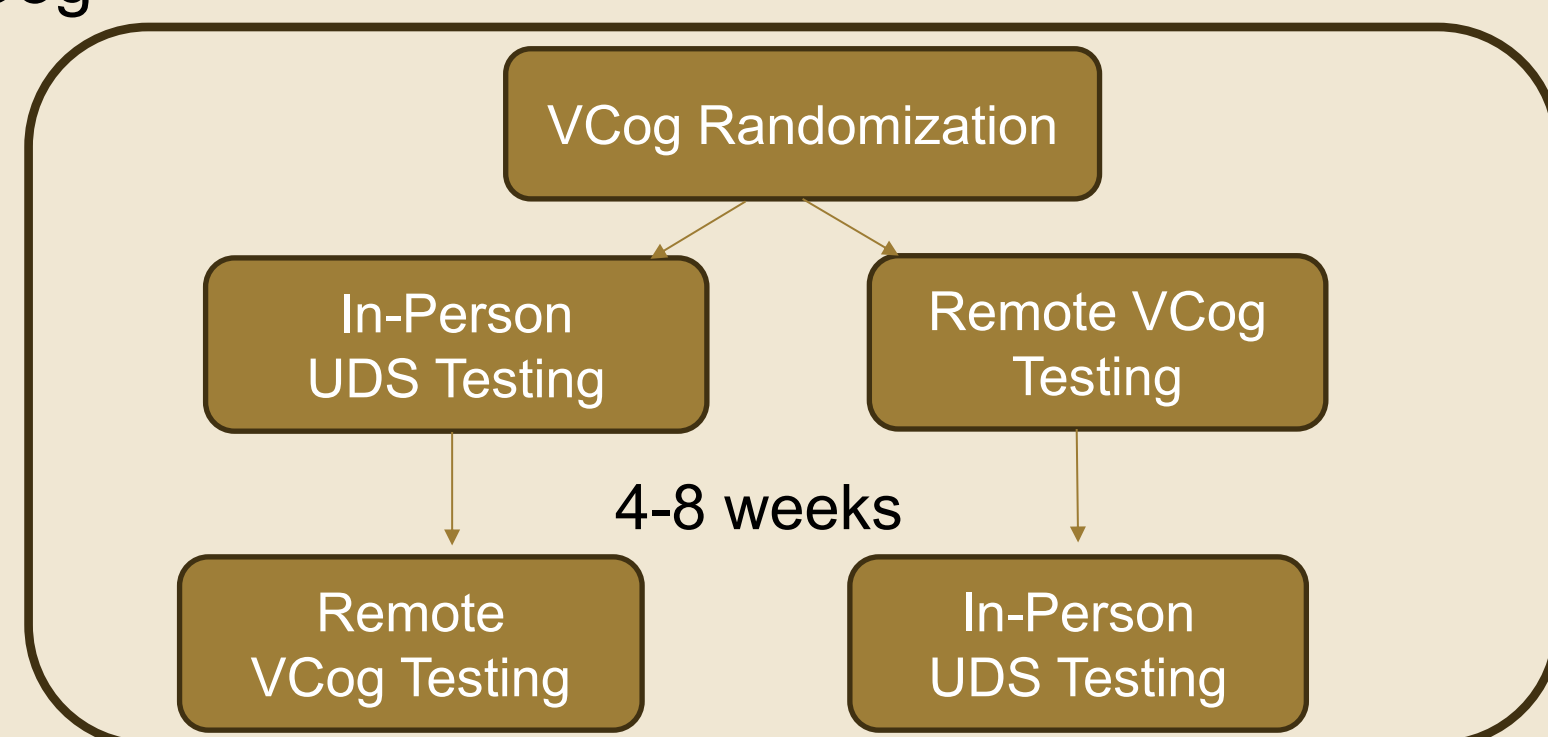
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Background

- With increasing usage of tele-health, an understanding of how older adults interact with various technologies is critical.¹
- Previous work suggests a high willingness from older adults to conduct cognitive assessment remotely.²
- The 'VCog' study presents an opportunity to explore how technology usage among older adults with and without cognitive impairment relates to performance on standardized video-administered cognitive tests.

Subjects & Methods

- Data was collected as part of the Validation of Video Administration of a Modified UDSv3 Cognitive Battery study 'VCog'³



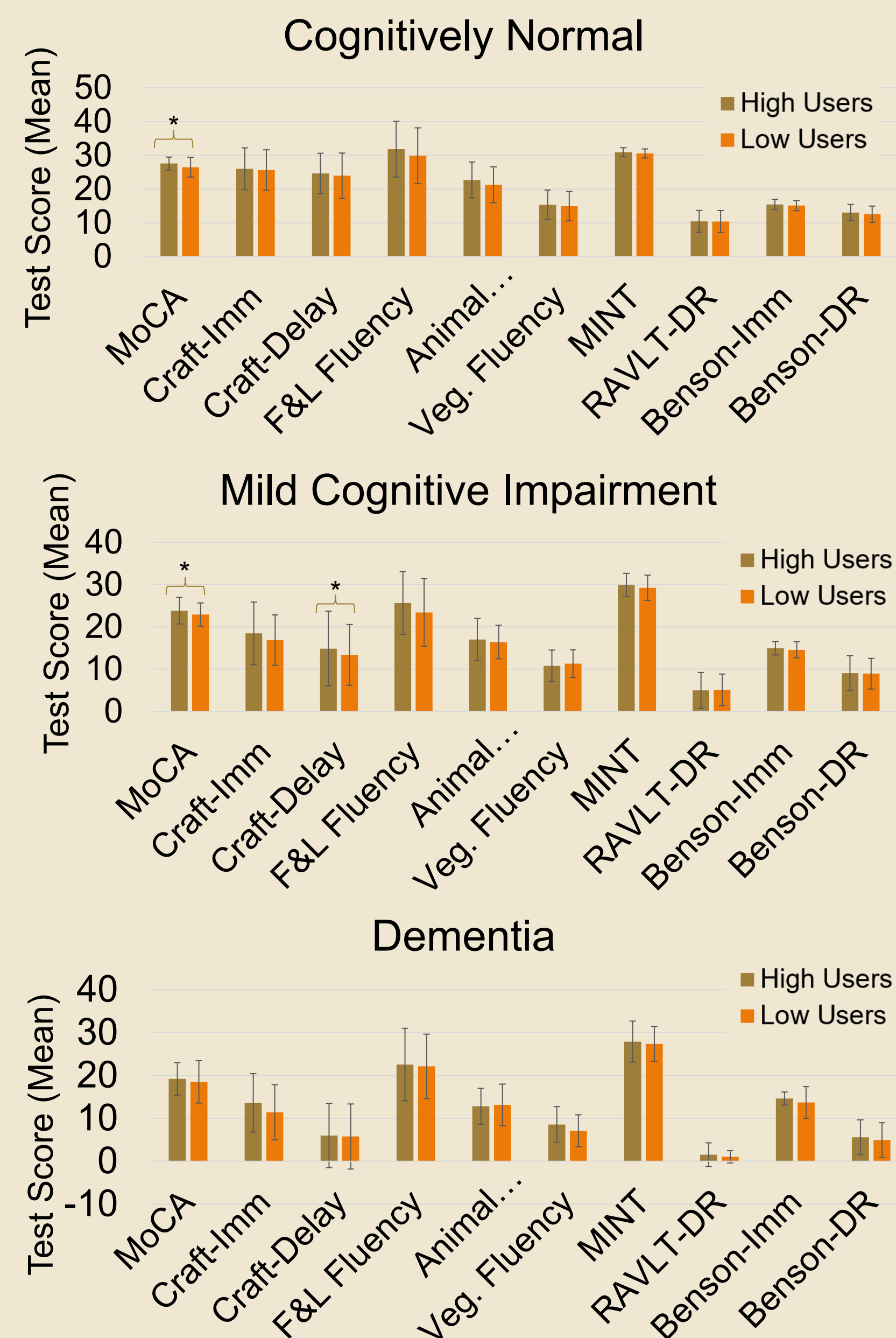
- As part of the VCog protocol, **460 participants from 12 ADRCs**, previously classified by their ADRC as having **normal cognition (CN)**, **mild cognitive impairment (MCI)** or **mild dementia (DM)** completed a battery of cognitive tests (Uniform Data Set v3) via video and in person, in randomized order, 4-8 weeks apart.
- They also completed the **Technology Use Questionnaire** immediately following completion of their video-based cognitive assessments.
 - Technologies assessed:** smartphones, tablets, laptops, desktops, and video-conferencing technology
 - Frequency:** every day, 1-2x/week, several times a month, once a month, less than once a month, or never
 - Need for assistance:** yes, sometimes, no
 - Confidence in usage:** 1 = not confident, 10 = extremely confident
- The majority of participants in the VCog study completed the video testing from a personal device (laptop, desktop, or tablet), however 20% opted to use a loaned tablet (GrandPad®)

Measures

Table 1. High vs. Low Laptop/Desktop User Demographics

	Overall (N=460)			CN (N=156)			MCI (N=228)			DM (N=76)		
	High	Low	p-value	High	Low	p-value	High	Low	p-value	High	Low	p-value
Age (yrs), Mean (SD)	75.54 (7.28)	75.45 (7.30)	.89	73.64 (6.67)	74.90 (6.65)	.26	76.57 (7.48)	75.96 (7.09)	.53	77.26 (7.19)	75.04 (8.53)	.24
Edu. (yrs), Mean (SD)	17.02 (2.23)	15.78 (2.60)	<.0001	16.86 (2.04)	15.66 (2.47)	<.01	17.01 (2.41)	15.52 (2.55)	<.0001	17.58 (1.96)	16.49 (2.78)	.06
Race (% non-white)	54 (20%)	54 (28%)		23 (23%)	18 (32%)		27 (20%)	33 (35%)		4 (13%)	3 (7%)	

Figure 1. High vs. Low Tech User Cognitive Test Performance by Cognitive Group



- Overall, **high users generally outperformed low users on all cognitive tests** ($p < .05$) with the exception of the RAVLT and vegetable fluency.
- This finding is not surprising, given our previous finding that frequency of tech use varied by cognitive status.³
- However, **when examined within cognitive group, there were generally not differences between high and low users** on cognitive test performance, with the exception of the MoCA for CN and MCI participants, and the Craft Delay for MCI participants (**Figure 1**).

Table 2. Association of Laptop/Desktop Usage and Cognitive Test Scores

Cognitive Test	LS Mean (95% Confidence Interval)		p-value
	High	Low	
MoCA	21.81 (20.38, 23.25)	21.17 (19.70, 22.64)	.04
Craft-Imm	17.90 (14.80, 21.00)	17.08 (13.91, 20.25)	.21
Craft-Delayed	13.74 (10.19, 17.28)	12.98 (9.34, 16.61)	.31
F&L Fluency	24.59 (20.87, 28.31)	23.87 (20.06, 27.67)	.36
Animal Fluency	18.07 (15.78, 20.36)	17.85 (15.51, 20.19)	.64
Vegetable Fluency	12.56 (10.71, 14.41)	12.42 (10.53, 14.31)	.72
MINT	28.75 (27.49, 30.02)	28.54 (27.25, 29.83)	.43
RAVLT-DR	5.19 (2.69, 7.69)	5.12 (2.60, 7.64)	.88
Benson-Immediate	14.86 (13.95, 15.78)	14.52 (13.58, 15.45)	.07
Benson-DR	9.41 (7.78, 11.04)	9.12 (7.44, 10.79)	.40

- Regression analyses accounting for age, education, race and cognitive strata revealed few remaining differences.

Conclusions

- A substantial portion of our sample reported daily computer use, though high and low users only differed with regard to education.
- Results showed that, within cognitive groups, **high level of baseline technology use did not confer any advantage of higher cognitive test scores on remotely administered tests, suggesting that** infrequent technology use or low technology literacy should not necessarily be a barrier to participation in virtual assessments.
- This is further evidence that video-assisted cognitive assessments are feasible in health and cognitive impaired older adults.

References

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Funded by R01 AG075959