Tablet-based vs. table-top cognitive games for older adults: Which are more engaging?

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Disclosure

I have no actual or potential conflict of interest in relation to this topic or presentation.

Several thinking skills such as memory and focus decline in older adults with cognitive impairment or dementia

Video-game and computerized cognitive training (CCT) improve cognitive functioning in healthy adults

Outcomes

- **Video games and CCT improves** several cognitive functions that decline with aging (Toril et al., 2014).
- Significant effects on the **cognitive functions**: nonverbal memory, verbal memory, working memory, processing speed, and visuospatial skills (Lampit, Hallock and Valenzuela, 2014).

Participants

Older participants (>71 years) **improved** cognitive functions after training than younger participants (60–70 years) (Toril et al., 2014).

Interventions

- A training of **≤6 weeks** (Toril et al., 2014).
- **≤3** sessions per week (Lampit, Hallock and Valenzuela, 2014)
- Sessions of **30 minutes long** or longer (Lampit, Hallock and Valenzuela, 2014)
- **Group-based** interventions (Lampit, Hallock and Valenzuela, 2014).

VibrantMinds

Whack-a-Mole

Mahjong
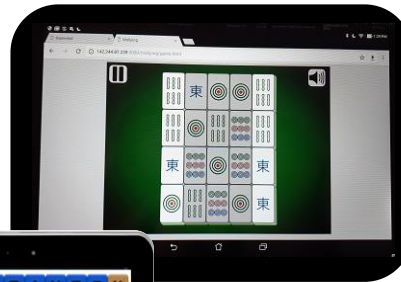
Bejeweled

Word Search

Software by:
Guana, Murdoch, Lazar, Liu, Stroulia
https://guana.github.io/phydsl/

Engagement

- Critical when doing meaningful activities

- Immersion or task involvement

- "player's subjective acceptance of a game's reality and degree of involvement and focus on the task." (Roozeboom, Visschedijk, & Oprins, 2017, p. 85).

Objective

To describe how older adults with and without cognitive impairment engage during tablet-based vs. table-top cognitive games.

Data and Methods

Single Case Design

| | Baseline
2- 5 sessions | Intervention
16 sessions | Follow-Up
1- 3 sessions |
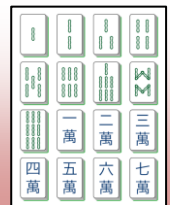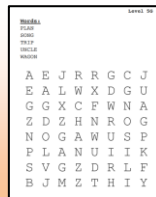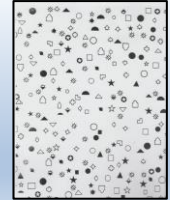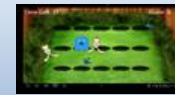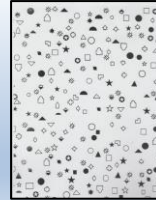
14 Older Adults No CI
6 Older Adults dementia

Baseline

Intervention

Follow-Up
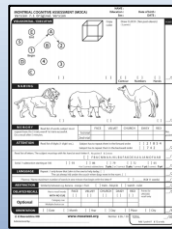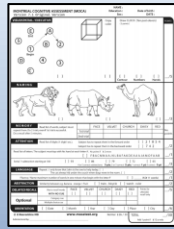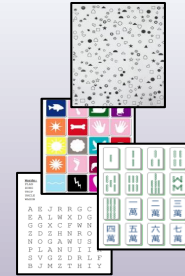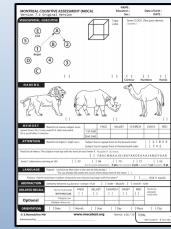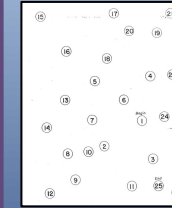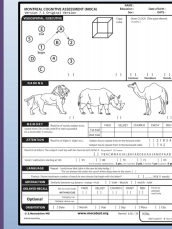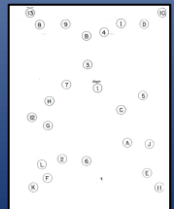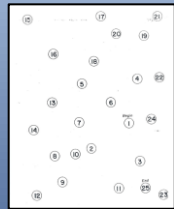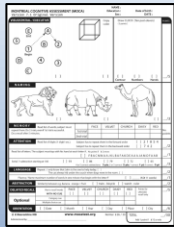
Cognitive measures

Cognitive measures

TMT-A   **TMT-B**

Sessions

Each session

Each session

PANAS
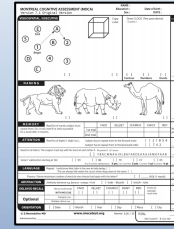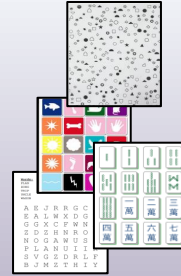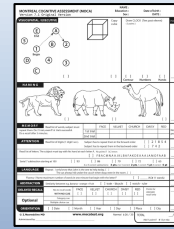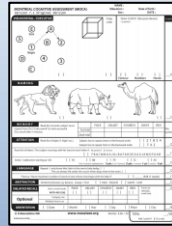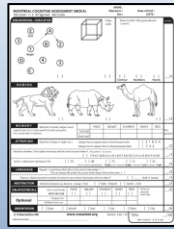
Date: _____   Participant ID: _____

Name of game played (Circle the option):

    Whack-A-Mole   Word Search   Bejewelled   Mahjong

This scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent you feel this way right now, that is, at the present moment.

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely

_____interested   _____irritable

_____distressed   _____alert

_____excited   _____ashamed

_____upset   _____inspired

_____strong   _____nervous

_____guilty   _____determined

_____scared   _____attentive

_____hostile   _____jittery

_____enthusiastic   _____active

_____proud   _____afraid
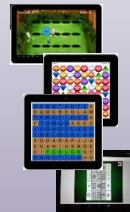
Results

Variable	P3	P15
Age in years	74	83
Female	Y	Y
Diagnosis of cognitive impairment	Y	N
Residential Status	Lives in community with partner	Retirement home/assisted living
Education Level	College Diploma	Bachelor's Degree
Handedness	Right	Right
Technological Literacy (use of computers, tablets, or smartphones)	Daily	Daily

Word Search

Results

PANAS
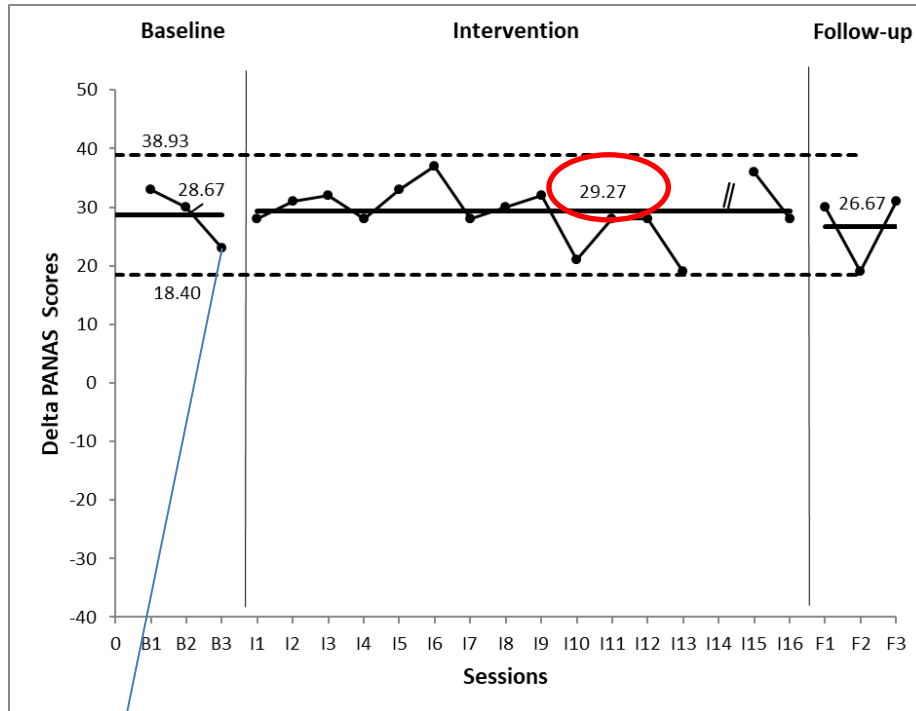
ENGAGEMENT
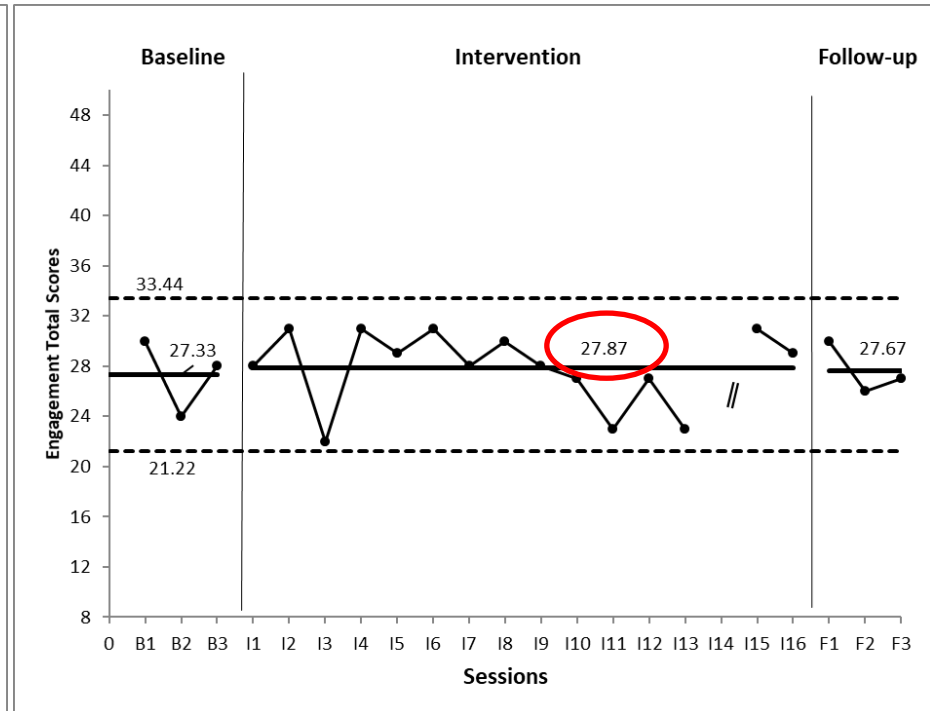
Forgot glasses

MOCA (Score)	PreBL	PostBL	PostInt	Follow-Up
P03	8	11	13	8
TMT A&B (Sec.)	PreBL	PostBL	PostInt	Follow-Up
P03	---	995	942	839

// = Missing data

⬆ 15.7%

Results

PANAS
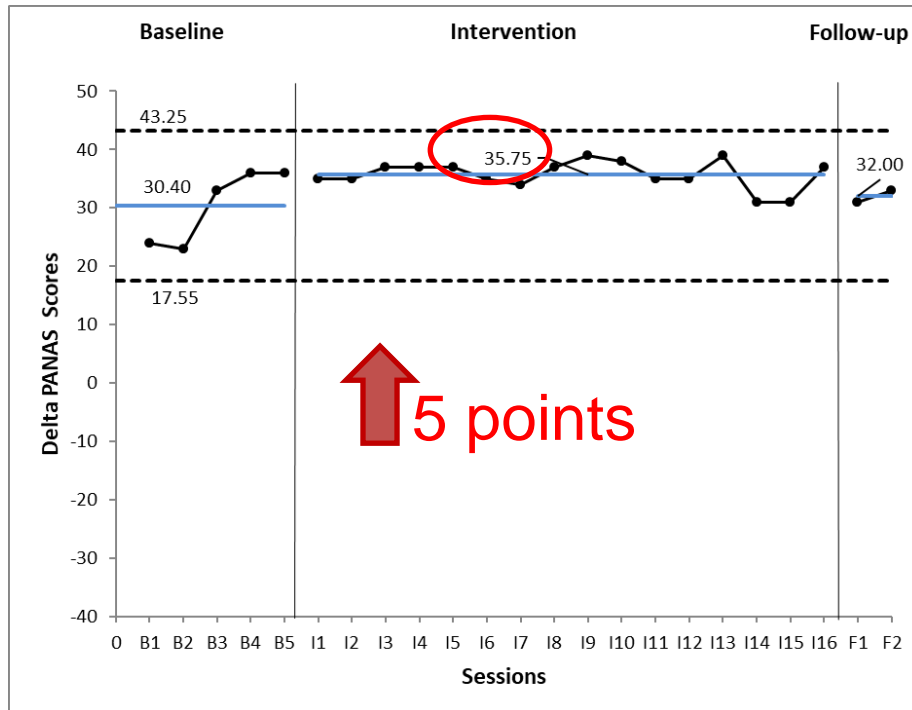
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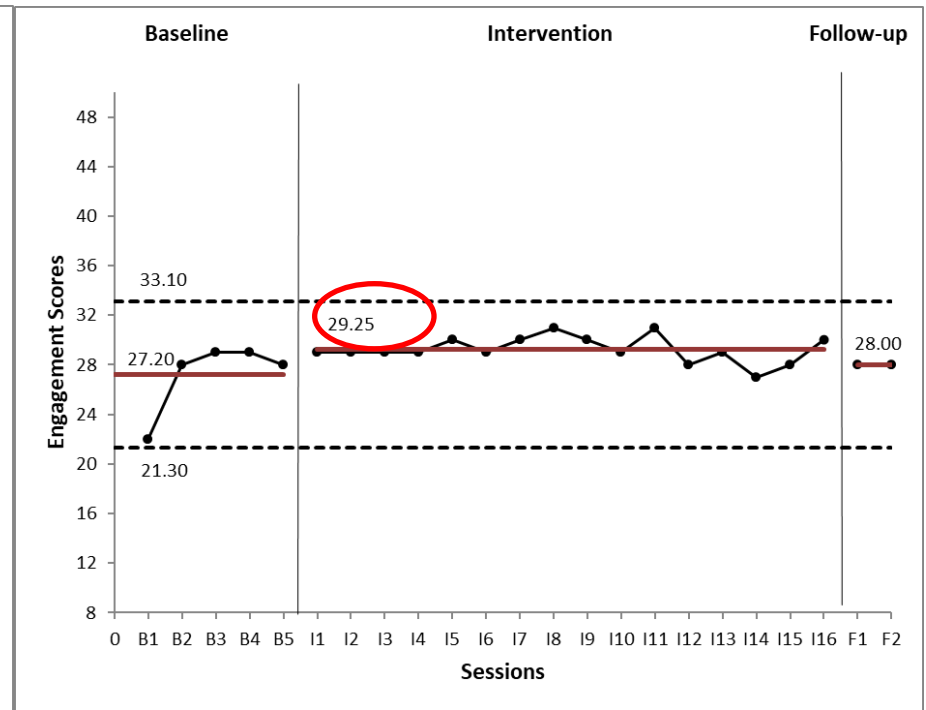
MOCA (Score)	PreBL	PostBL	PostInt	Follow-Up
P15	30	28	29	30

TMT A&B (Sec.)		PostBL	PostInt	Follow-Up
P15	165	166	169	148

Conclusion

- Emotions and engagement increased during the intervention; however, it was not significant.

- Measuring engagement in older adults with dementia is challenging.

- Tablet-based games provided clear and immediate feedback → play more independently compared with the table-top games

- An alternative for people with dementia to engage in cognitive activities.

Acknowledgments

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Thank you!

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