Time Travelling with Technology (TTT) for People with Dementia

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DCRC Dementia Centre for Research Collaboration

WESTERN SYDNEY UNIVERSITY

The MARCS Institute for Brain, Behaviour and Development

UTS

Ingham Institute Applied Medical Research

BaptistCare

Objectives

1. Understand technology-based reminiscence therapy (RT)
2. Understand structure and implementation of the Time Travelling with Technology (TTT) program
3. Describe methods for evaluating the program
4. Explain potential benefits of technology-based RT
5. Conceptualise possible psychosocial processes engaged in TTT

Dementia & Alzheimer's Disease

- loss of memory, language, perception, personality, judgement, and problem solving
  - as dementia progresses: mood disturbances, personality changes, agitation, aggression, pacing
- ***2nd leading cause of death*** in Australia; since 2016, leading cause of death among females
- Currently: ***>447K*** Australians with dementia
- ***250*** people diagnosed each day
- there is no cure

Reminiscence Therapy (RT)

- vocal or silent recall of life events, activities and experiences using personal triggers - photographs, music, objects
- means to talk about memories
- promotes communication, reduces social isolation, improves mood and sense of self worth, sustains relationships

Google Earth + Liquid Galaxy

Wrap-around screens, hyper real software-rendered images are navigable through space and time, eliciting a sense of agency, envelopment and continuity

Programs using/evaluating Technology

- Technology, 2D/3D, may boost intervention (Bejan et al 2017; Lazar et al. 2016; Subramaniam & Woods, 2012)
- Photo videos (Yasuda et al. 2009); video sharing via YouTube (O'Rourke et al. 2011)
- Studies often limited by small sample sizes and/or weak design (Lazar et al. 2014)

Research Questions

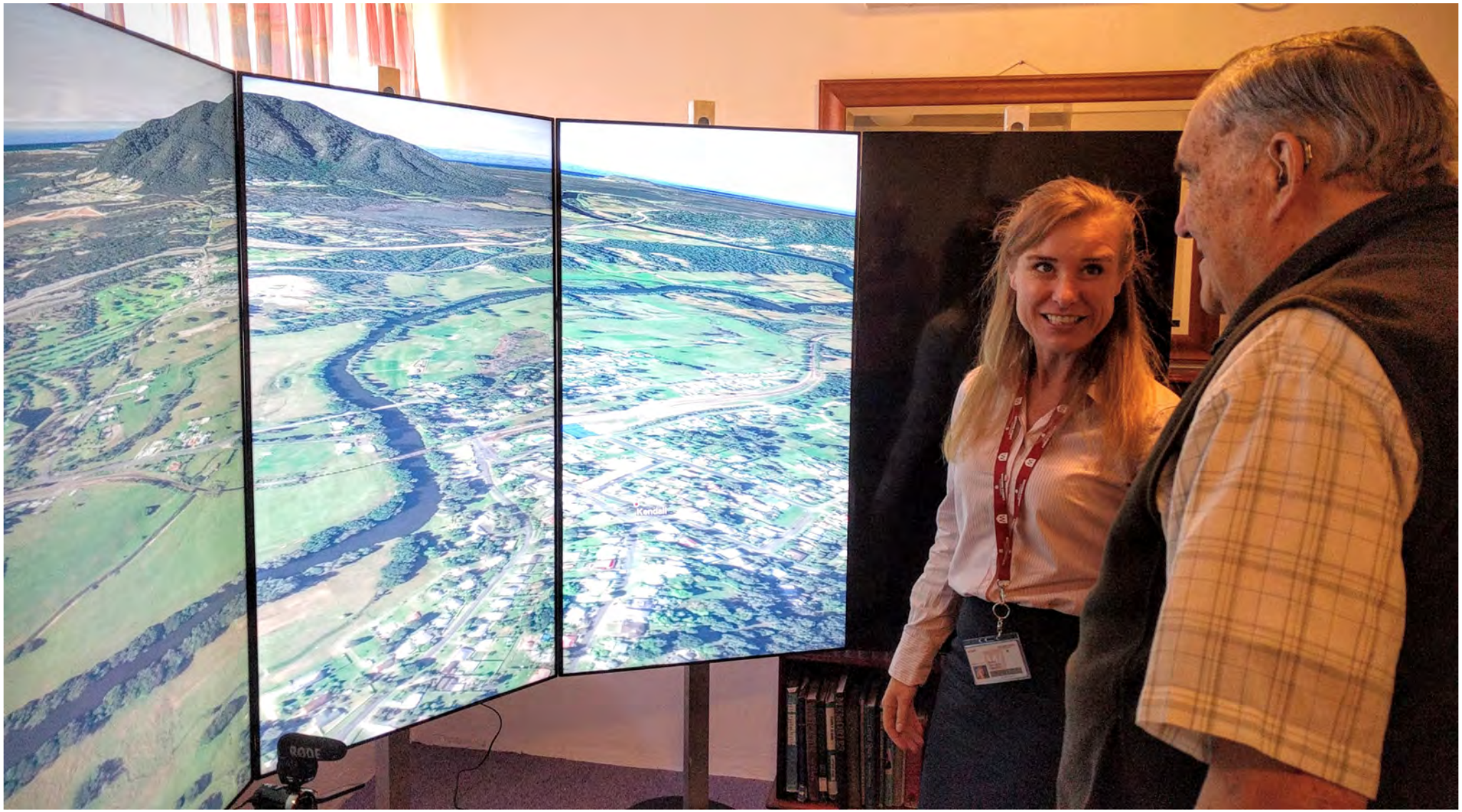
1. Is Liquid Galaxy an effective and practical RT medium for people with dementia in aged care?
2. If so, does the immersive nature of a Liquid Galaxy system surpass non-immersive technology-based RT?

Method & Measures

- Compare high- and low-tech RT (matched MMSE)
- Landmarks pre-loaded: Google Earth, StreetView
- 6 weeks: 1 x 30 min session p/w in groups
- Measures at baseline, and after Session 6
- Behavioural and psychological outcomes:
  - Quality of Life (QoL)
  - Neuro-Psychiatric Inventory-NH (NPI)
  - Observations: carers, family

Set-up at Yallambi
TTT - High-Tech: 5 screens, dynamic
WONDERAMA

Low-tech static ‘postcards’


Kendal

Protocol

1. MMSE and match low- and high-tech groups those scoring < 14 and ≥ 14
2. From ‘Who Am I’ and family, gather landmarks: childhood, school, work, family
3. Load landmarks into system
4. Baseline QoL & NPI
5. Wk 1: Google Earth, generic places of interest
6. Wks 2-3: Customised, Google Earth
7. Wks 4-6: Customised, StreetView
8. Post-test QoL & NPI

Observations & Results (N=24)

- Enjoyable, engaging, feasible
- Elicited conversation, sense of spatial location

NPI scale:

significant improvement in High-tech vs Low-tech
(reduced irritability)

QoL scale:

no difference between High- and Low-tech

Open-ended comments

"Thank you so much for doing this; he loves it; he thinks it's amazing how you have all the big screens and take him to places he knows." (family member)

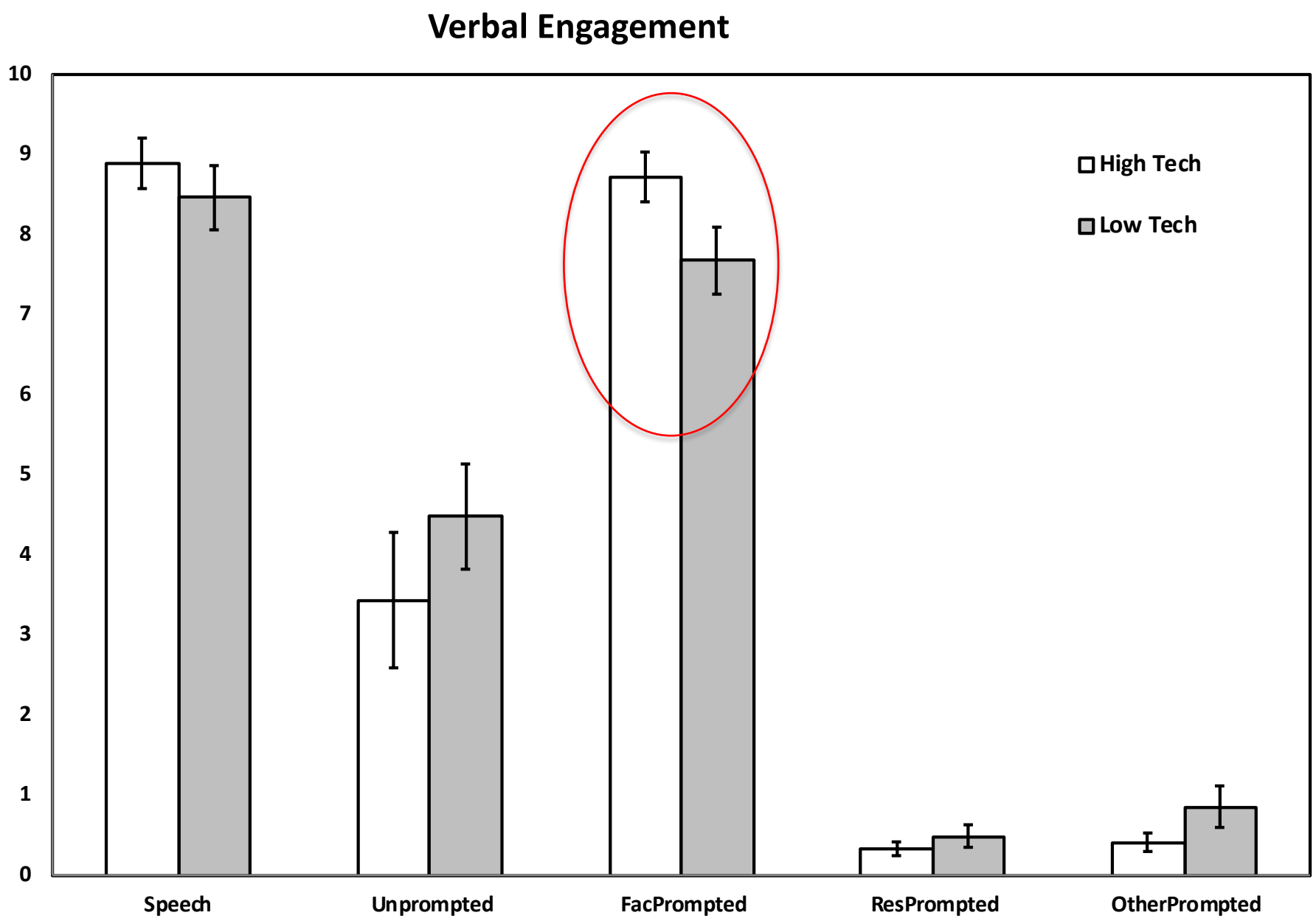
"…the other day I was wheeling a resident back from a session that is usually quite withdrawn and she said, 'Oh no take me down to the dining room I feel like chatting after that'" (Lifestyle coordinator)

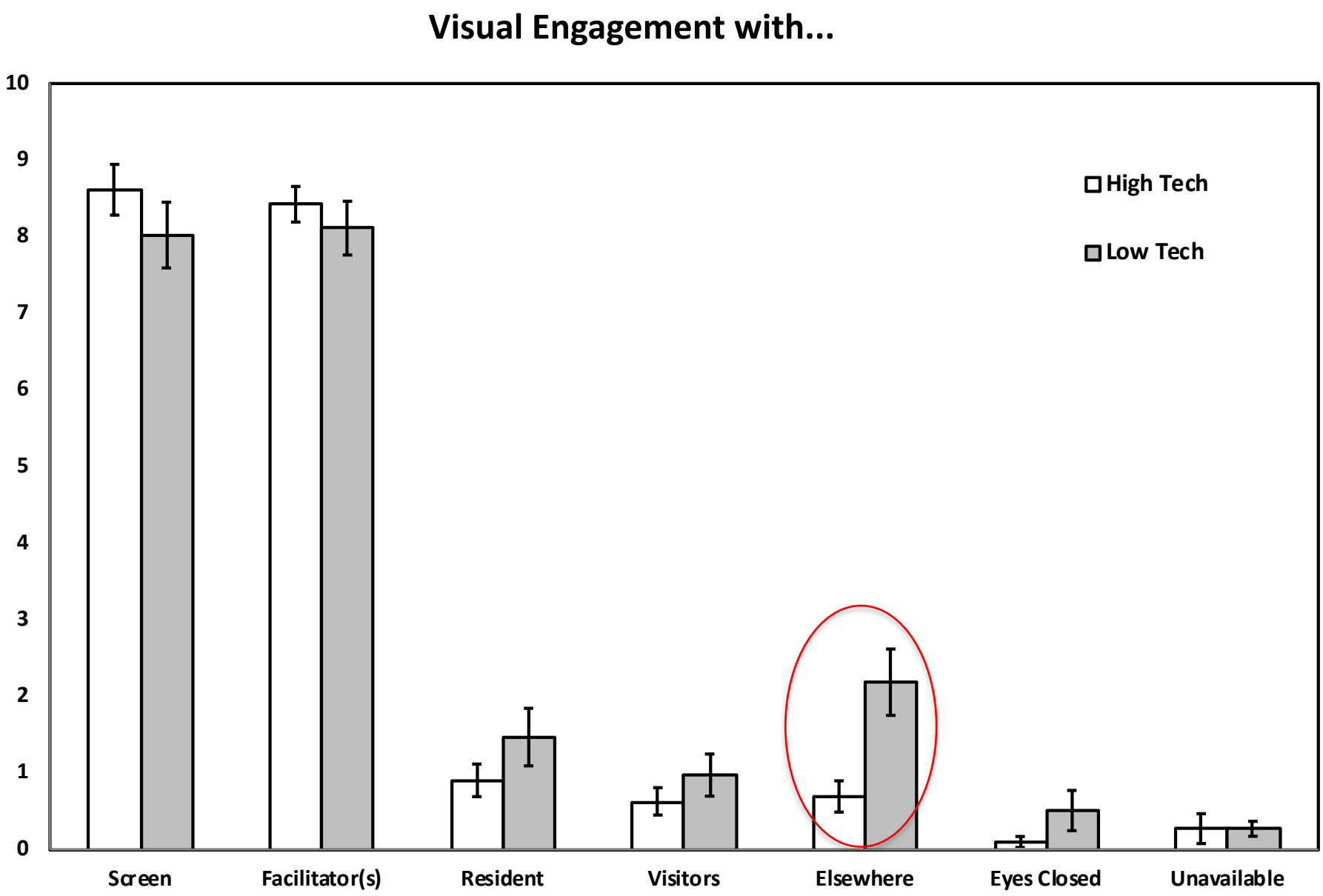
"Yesterday not one remembered."

"Lana, when her daughter came, recounted the whole journey for her. She said, 'I have been to a beautiful place.'"

"Cathy loves it, enjoys it, remembers it."

"Abby loves it. Just to get a smile out of her you're doing well… because she has very… [demonstrates flat affect]. Coming back in the bus yesterday, as we were pulling back up to the unit she said 'that was really good'."


Verbal Engagement
10
9
8
7
6
5
4
3
2
1
0
High Tech
Low Tech
Speech
Unprompted
FacPrompted
ResPrompted
OtherPrompted


Visual Engagement with...
10
9
8
7
6
5
4
3
2
1
0
High Tech
Low Tech
Screen
Facilitator(s)
Resident
Visitors
Elsewhere
Eyes Closed
Unavailable

Conclusions

- Contemporary medium, not merely nostalgia; hyper real
- Dynamic (high-tech): *moving* through space, time
- Joint attention, shared external focus/gaze

Knowledge Translation & Next Steps

- Automate for roll-out, landmark loading
- Tablet and flat screen versions
- Multimodal TTT
- Further understand mechanism: *why* it works – attention; language
- Language as an index; training and evaluation

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Reference List & Links

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Time Travelling with Technology video:

https://www.youtube.com/watch?v=YK8NF4-vgaI

Thank You…

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