Evaluating the benefits of aphasia intervention delivered in virtual reality

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Overview

• Study 1
  • Creation
  • Evaluation
  • Results
• Study 2
  • Work in progress
• Study 3
  • About to start
Study 1: Questions

• Can we build a virtual communication environment for people with aphasia?

• Will access to the environment:
  • improve participants’ communication skills?
  • improve communicative confidence?
  • reduce social isolation?

• What are participants’ views about the environment?
Phase 1: Creation
Co-Design

Team: consultants with aphasia, SLT researchers, HCI researchers, Technical researcher

• 10 workshops covering:
  • Locations and Opportunities
  • Communication
  • Avatars
  • Interaction/Navigation
  • Remote testing
Lessons from the Co-Design

• Emphasise fun and social uses of language, rather than ‘practice’
• Make navigation simple and easy to use
• Allow for autonomy and choice
• Engage fantasy and playfulness
• Build in flexibility
• Be prepared for different individual responses
  • (Wilson et al, 2015)
EVA Park

• An enclosed island

• Contains
  • Houses
  • A Cafe
  • A Tropical Bar
  • A Versatile Counter (e.g. for booking a holiday)
  • A Health Centre
  • A Hair Dressers
  • A Disco
Phase 2: Evaluation
Intervention

- 20 people with aphasia had access to Eva Park
  - 5 weeks intervention (in 4 ‘live’ periods)
  - Daily sessions with support workers
  - Personal goals/programme of activities
  - Unlimited independent access
  - Pre and post intervention testing
Participants

• Used English prior to stroke
• at least 4 months post stroke
• Good vision and hearing
• Moderate aphasia
Examples of Goals

• Asking questions
• Word finding
• Coping with specific situations, such as:
  • A doctor’s appointment
  • Speaking to a receptionist
• Talking in groups
• Giving a speech
Examples of Activities

• Role plays
  • Ordering a drink
  • Getting a hair do
  • Reporting a suspicious character to the police
  • Holding a board meeting to discuss a new sports centre in Eva Park
Examples of Activities

• Conversation
  • Education and career history
  • Plans for the weekend
  • Past experiences of travel
  • Wife’s trip to hospital
  • Experiences in Eva Park
Examples of Activities

• Group topics
  • News:
    • Mandela funeral
    • Nigella drug scandal
    • Floods
  • Music
  • The Royal Family
  • Gossip
Examples of Activities

• Eva Actions:
  • Dancing
  • Swimming
  • Visiting the tree houses, boats, light house
Experimental Design
Recruit and Screen

- Time 1
  - 5 weeks access to EVA
  - Nothing

- Time 2
  - Time 2
  - Nothing
  - 5 weeks access to EVA
Assessments

Administered T1, T2, T3
Assessments: Communication

• Functional Communication:
  • CADL-2 (Holland et al, 1999)

• Word retrieval
  • Fluency test (Supermarket, Airport, Health Centre, Restaurant, School, Cinema, Park, Kitchen, Hair Salon, Sports Stadium)
Assessments: Communication

• Narrative
  • Retell a familiar story:
    • Narrative words per minute

• Conversation:
  • Randomly partnered with SLT student (different student each time)
  • 10 minute sample for analysis
Assessments: Confidence

• Communication Confidence Rating Scale for Aphasia (Cherney & Babbitt, 2011)
Assessments: Social Isolation

• The Friendship Scale (Hawthorne 2006)
  • 6 item measure re feelings of loneliness and social connection
Views of Participants

• Qualitative interviews conducted with all participants pre/post EVA
• 5 interviewed one year later
  • Experiences of communication
  • Social activities
  • Use of technology
  • Views of EVA
  • Perceptions of change
The Results
Good News

• Scores on the CADL improved significantly
• Gains only occurred after Eva Intervention
CADL Scores: Immediate vs Delayed Group
More Good(ish) News

• Word production improved significantly
• The categories related to Eva improved most
• BUT
  • Changes did not only occur following intervention
  • The difference between the Eva and non Eva categories was not significant
Less Good News

• There was no change on:
  • The narrative test
  • Conversation
  • Measures of confidence or social isolation
Interview Results

• Strong themes
  • Very Positive views about EVA Park
  • Positive affect associated with EVA Park Experiences

• Positive Change
  • In communication
  • In real world activities
  • In computer use
  • In confidence
“Because, um, well it was the idea of [points] avatar and communicating with other people is by and large brilliant and I want to see many more of this, um, many more of this avatar with other people, with communicating news and, and music.”

"I’m doing things I never thought I’d do again. (INT: such as?) going on the computer and ordering my freedom pass.”

“On the decking up the top by one of the houses, and I’m thinking ‘oh god I’m on holiday here’”

"I’m not afraid now of saying what I want to say, so the words come out. So the confidence has come back now. Cos before I was full of it but now, after stroke it all disappears"
Conclusions

• It was possible to create a virtual communication environment with and for people with aphasia

• Intervention in Eva Park had significant benefits for communication

• Participants were extremely positive about their experiences in Eva Park
Next Steps
Taking EVA Park into Service

• 1 year project (2016-2017) to:
  
  • Further develop the Eva Park software so that it is service ready
  
  • Run single case therapy experiments in Eva Park targeting discrete aspects of language

The Tavistock Trust for Aphasia
Delivering group support for people with aphasia through Eva Park

• 2 year project to investigate:

  • Is it feasible?
  • Is it acceptable?
  • Impact on mood and communication
  • What does it cost?
Final Conclusions

• One model of EVA Park intervention has been shown to benefit communication

• EVA Park can be used to deliver a range of well documented treatment approaches, although outcomes have yet to be evaluated

• Feasibility for group support will be tested next
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Happy Christmas from EVA Park
Baa Humbug