

Sequence Prompting for People with memory problems

Research 2011/2012

Funded by the DUNHILL MEDICAL TRUST

Bath Institute of Medical Engineering
www.bime.org.uk

GUIDING PEOPLE WITH MEMORY PROBLEMS THROUGH SIMPLE TASKS

People living with memory problems can experience increasing difficulty carrying out multi-step tasks in the home, even if they can perform each of the steps in isolation. This gradual inability to string steps together can lead to frustration and a loss of independence.

There is no clear consensus on the most effective ways to provide such prompting.

ABOUT THE RESEARCH PROJECT

This ethically approved research funded by the Dunhill Medical Trust aims to understand in detail how technology can be used to prompt people with dementia through the steps of simple tasks at home by putting them in control of a prompting system. The project has highlighted why different types of prompts (e.g. text, audio, picture, video) have different degrees of success, by testing them during home visits. Close observation of other tasks in the home has exposed some of the benefits and challenges of designing a practical task prompting system. The home setting has allowed valuable insight into how people want to use such technology and how best to introduce it. This project has also highlighted that people with mild to moderate dementia can still learn and relearn skills and functionally still read and follow written instructions.

- *9 volunteers with mild to moderate dementia each with a supporting partner or relative*
- *All participants were functioning at the planned and exploratory activity levels according to Poole Activity Level (PAL) Instrument*

• **67 visits** *all research completed in the familiar environment of volunteers' homes*

WHAT ARE SIMPLE TASKS?

It was challenging to select a task that was self-contained, portable and consistent. We identified the card-and-envelope task as our main task and putting a CD into a portable CD player as our secondary task.

Take the card
and
sign it with your name

Put the card
in the envelope

Put a stamp
on the envelope

Card and envelope task: Text prompts

Technology must target meaningful activities respecting autonomy and can be mundane or exciting

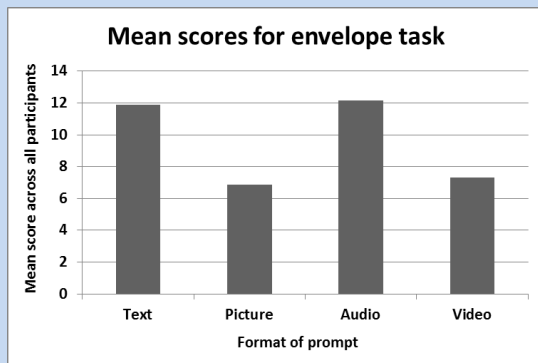
Our volunteers chose the following wide range of individual tasks – *playing wii tennis, emptying the dishwasher, getting supper from the fridge, putting a music player on, using the radio, making tea for two, changing the TV channel, managing medication and locking the door*



Using a touchscreen computer to compare text recorded voice, photographs and video clip prompts for simple tasks at home

OUR RESULTS?

Each task was videoed and a scoring system was developed to quantify the observations of each user carrying out the tasks. All scoring was independently moderated.



Graph showing the mean score achieved for each prompting format, averaged across all participants, for the card-and-envelope task. The higher the score, the more successfully the participants completed the task

There were no differences in effectiveness between the audio and the text based messages. These were significantly more effective than pictures or video based prompts in allowing the volunteers to complete the task.

WHAT DID WE LEARN?

- Prompting based on text or audio is more effective than that based on picture or video
- If the instruction can be captured simply in a meaningful phrase, the simplicity of words seems easier for people to process
- Conversely imagery appears to be more ambiguous when it comes to portraying an action
- It has also been observed that volunteers are more likely to interpret text or audio as instructions and pictures or video as just information

WHAT ELSE DID WE LEARN?

Line drawings and animations - The results were the same as for photographs and videos

Self forwarding - Volunteers were able to self forward using the touch screen. This gave a sense of control to the task and it did not matter if the completion of the task moved ahead of the prompts

Use of the right language - Small changes to familiar words **greatly** improved outcome

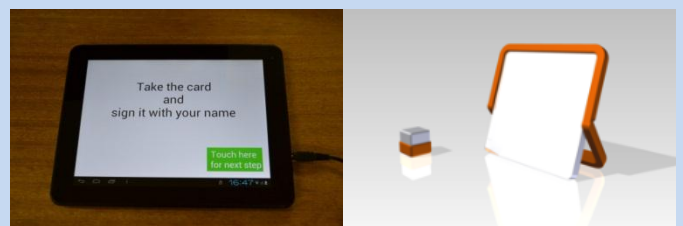
Too many steps - Even a simple task like "making tea for two" can have lots of steps

Need for timing and alerts - Many activities need to happen at specific times and an ability to alert or motivate by a reminder may be the first stage of a prompting sequence

Awareness of source of help - Keeping an awareness that prompts are available to help with a task is difficult, especially when the task involves movement for example around the kitchen

FIRST PROTOTYPE

We have completed some initial software development of a tablet computer. Product design students have generated ideas about how this could be presented as a product.



OUR PLANS FOR THE FUTURE

We would like to:

- Undertake further investigation on how set up and use technology to prompt and its value to people living with dementia and their families
- More development work on a new touchscreen helper

Should I
press
this?

This research has been shared at Pervasive Health 2011, RAATE 2011, Designing Ahead 2012, AAL Forum 2012, ETAC 2012

OUR THANKS TO OUR VOLUNTEER PARTICIPANTS and everyone who has helped us by contributing to this work
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