



MEMORY
LANE
GAMES

Clinical Trial:

Improving the quality of life for people over the age of 65 living with dementia.

A summary of the results of a remote randomised controlled trial using the Memory Lane Games App.

By Helen McAskill RN

- Director of Clinical Research for
Memory Lane Games



Introduction

and Executive Summary by Bruce Elliott - CEO

The primary focus of Memory Lane Games has always been to improve the quality of interactions between people living with dementia, their families and caregivers. Losing communication and connection through dementia is a devastating experience for everyone involved as it is so fundamental to our human nature.

The app's ability to trigger memories, inspire storytelling, and foster better understanding is something we have a great deal of anecdotal evidence for and is an immense source of pride for the team.

This study represents the first step in quantifying this impact and provides clinicians with data which will ultimately support wider adoption and further research, all of which will help us with our goal of getting the app into the hands of those whom it can benefit.

We are thrilled to share these early indications.



Bruce Elliott
- CEO of Memory Lane Games

A handwritten signature in black ink, which reads "B E Elliott". The signature is written in a cursive, flowing style.

Highlighted Findings

grouped into three overarching themes

A connection between use of the app and improved wellbeing of the carer:

92% of carers felt the app made them more relaxed

67% of carers felt it made them happier

66 % of carers felt time spent using the app was worthwhile

"I am particularly emboldened by the connection between increased usage of the app with improved wellbeing of the carer as this underpins our hypothesis about making life easier for carers and its ability to provide emotional and/or physical respite." - **Bruce Elliott**

Improved communication and connection

92% of carers said the app taught both them and the person with dementia (PWD) something new

83% of carers said the app made the PWD laugh

58% of carers believed it had helped the PWD communicate more

50% of carers mentioned that it has positively affected their communication in some way

42% of carers felt the app helped them communicate more with their loved one

"Effectiveness and efficiency of care, likelihood of continued positive familiar relationships as well as reduced distraction, aggression and upset are all potential positive side effects of improved communication." - **Bruce Elliott**

“...so it brought all those memories back,
you see? So we had a laugh about that”.

- Carer quote

Pilot Study

This was a pilot study aimed at identifying whether the use of the Memory Lane Games App, in particular the individualised version, was associated with any changes in quality of life (QoL) of the person with dementia (PWD) and/or their main carer. In addition, impacts on communication and any unanticipated effects were examined. The methodology was scrutinised for its suitability in a larger, future trial.

An open invitation was extended to residents of the Isle of Man via the media and community organisations. Participants had to be diagnosed with mild/moderate dementia, 65 years of age or over and not suffering from severe depression. Twelve pairs of PWD plus carer were recruited and data was collected by questionnaire and interview at baseline, week 13 and week 26. The questionnaires used were the Standardised Mini Mental State Examination (SMMSE), the Clinical Dementia Rating (CDR), the DEMQOL, the C-DEMQOL and the Holden Communication Scale (HCS). Data collection was completed in November 2022.

The pilot study was also an exploratory delivery model, whereby it was a fully remote clinical trial. The study went to the patient, rather than requiring the patient and carer to come to a site regularly, also allowing for a more real-world based pilot. It is bold to move straight into a less controlled environment and this may have impacted the study findings to more realistic, rather than controlled outcomes, from the outset.



“Definitely did create some
conversation because we
talked about memories”

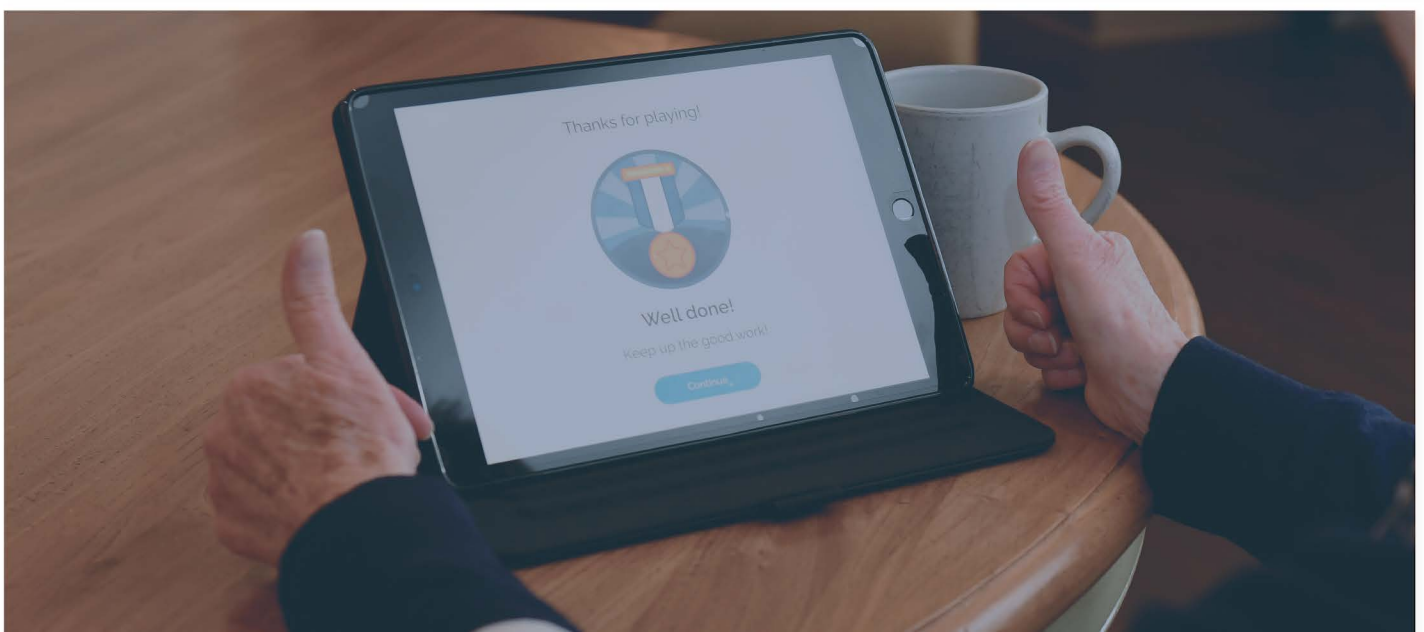
- Carer quote

Study Commentary

The trial data has shown a mixed picture. The study aimed to investigate the impacts of the app on QoL for both carers and PWD. The results showed that the intervention group did not exhibit a reduced decline in carer QoL at week 26 as was seen at week 13 where a positive impact was observed. Conversely, control participants demonstrated an increase in carer QoL, which was unexpected. When examining the dementia severity of the study sample, it was found that as dementia severity increases, carer QoL tends to decline. The PWD who played a high number of games on the app tended to exhibit a lower decrease in scores related to confidence in the future.

The overall picture for the qualitative data shows that the moderate patient group remained stable or showed a minor improvement in QoL and improved or remained the same regarding communication. The carer shows a small reduction in QoL but a shared improvement in communication. These results are not conclusive, with small changes from baseline noted in most cases. The smaller than anticipated data set of 12 patients and carers, may have impacted.

The study data also included real world data in the form of semi-structured interviews. The final trial results find meaning in the quantitative data set, and support a general positivity in app usage.



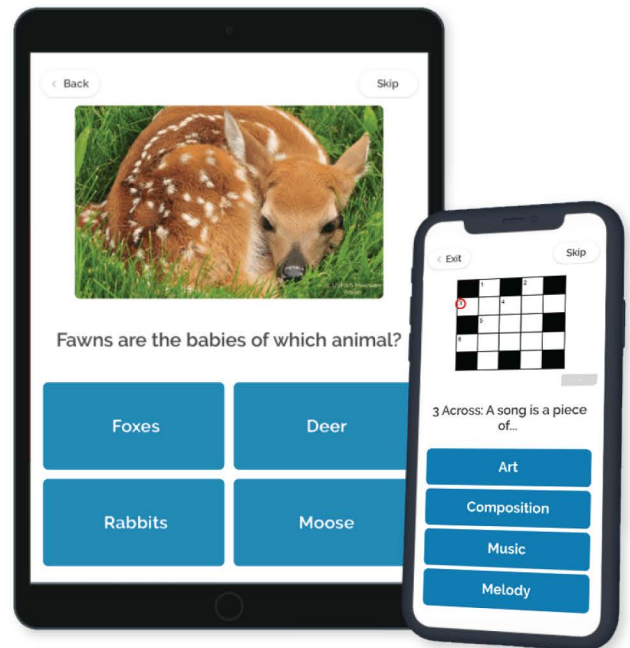
66% of carers believed that time spent using the app was worthwhile

The data also showed that over time, scores related to carer wellbeing and the ability to meet personal needs tended to increase for those with a high number of games played, while they decreased for those with a low number of games played per week. Additionally, PWD who played more games per week also played on their own more frequently (an average of 51% of the time) compared to those who played fewer games per week (an average of 22% of the time)

This could suggest that when the PWD plays more games on their own, using the app as a distraction, it provides the carer with temporary respite and the opportunity to tend to their own needs and wellbeing. This will form part of future research in the community and home care environment as a support for carers

33% of carers reported the app had a positive impact on PWD's thinking abilities

The SMMSE categorisations remained the same at the end of the study period in 75% of cases. In 17% of cases the severity of dementia reduced and in 8% of cases it increased. This is an area of significance for us to investigate further as a gradual decline would be anticipated in dementia. Longitudinal data in this area will be explored



58% of carers believed it had helped the person with dementia communicate more & 50% of carers mentioned that it has positively affected their communication in some way

Communication was a common theme that emerged in the semi-structured interviews

58% believed it had helped the PWD communicate more and none of the carers reported that the app had led to a decrease in communication.

Communication is an area to explore further throughout all future research as it is key to the ongoing wellbeing of the person with dementia.

Trial Limitations

The study was carried out with a small sample size of 12 pairs of participants (4 control, 8 intervention). This was smaller than the intended patient sample size of 30 pairs originally planned. Clearly any themes or patterns extracted from analysis may not be fully representative of the target population. The small sample size may have impacted the outcomes, as the study design was built to operate across a larger patient population.

All interviews, quality of life, and communication assessments were performed by the same clinical research nurse (not including the clinical dementia rating assessment which was performed by a separate assistant psychologist). This may introduce bias in how questions are delivered and recorded. Equally however, it created consistency in measurement and recording. Considered to be the 'gold standard' in dementia research, consistency will remain a common theme of rigor throughout our ongoing research.

The study design may have been light in the amount of contact with the clinical researchers. The conclusions drawn regarding increased usage and increased positive outcomes for those with moderate presentation, which is a sign that regular usage may have a greater impact on outcomes. Additional prompt calls and checking may have assisted better compliance and available data if this had been factored into the study design. If combined with a new delivery model, a fully remote trial, this could have been significant and must be addressed in future trials.

“I sort of feel a bit guilty that we haven't used it more often, because we both quite enjoyed it”.

- Carer quote



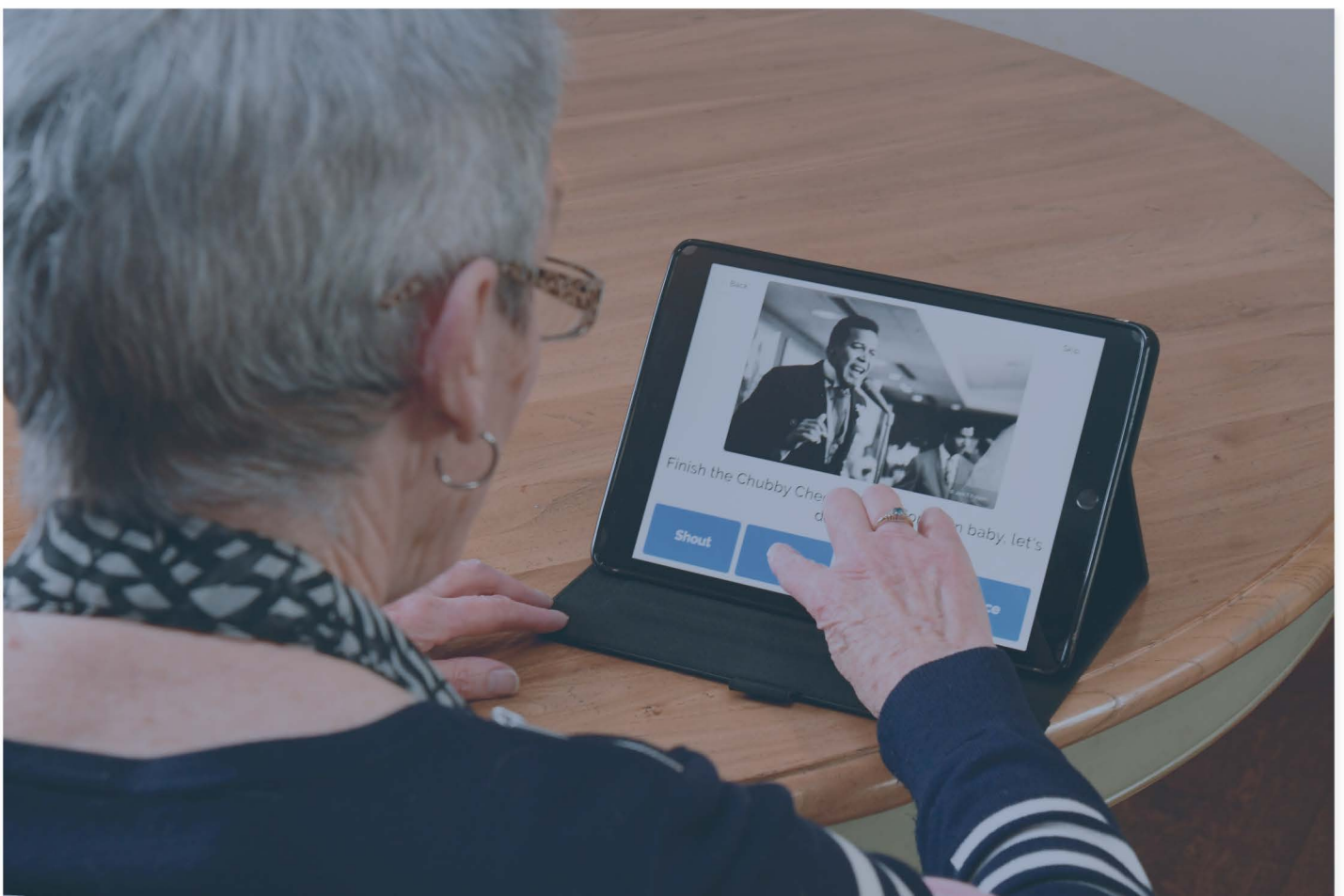
Application Safety

“It’s the [physical] closeness that I’ve really enjoyed”.

- Carer quote

There were no reported serious adverse events on the trial, therefore safety is of no concern. There were some reports of minor frustrations, these were related to repeat answers and the ease of some of the games. This is an area to review when looking at the level of gamification being linked to the presentation of the person with dementia. This will improve in future versions of the application.

The risk remains that the app may raise negative memories however, it is the expectation of those that care for the person, be it personally or professionally, to be aware of these areas if possible, and avoid those subject matters. This may not always be possible, and in rare instances upset may be triggered, and it will be down to care professionals and carers to support what is most likely a short term need for emotional support.



Current & Future

applications of Memory Lane Games

Primary Care (General Practice)

Outside of quality of life impacts, a 7 point data set has been established which would support monitoring of the PWD from a clinical standpoint. Testing in a controlled setting needs to be completed to support the hypothesis that it will aid diagnostics, monitoring and reporting. Areas of interest based on current data:

- Monitoring of cognitive decline
- Identification of possible acute illness (e.g infection, stroke)
- Personalised performance reporting

Community Care (Nursing, Residential and Home Care)

The app is being actively used in care home settings which is enabling the gathering of qualitative and quantitative data on usage and impact on participating residents.

Individual clinician case studies have been completed across nursing and speech and language specialisms. Both clinical specialties have reported significant support for the application as a tool helpful in a number of situations when working with dementia.

Secondary Care (Hospital)

Hospital environments are not conducive to helping people with dementia. Not only are they busy and noisy, but the clinical teams are not equipped to take the time to provide support for dementia patients. We have taken time to consider this area, and we are currently working with academics at a North West University to design and fund a trial into how Memory Lane Games could be helpful in this environment.

Highlighted Findings

grouped into three overarching themes

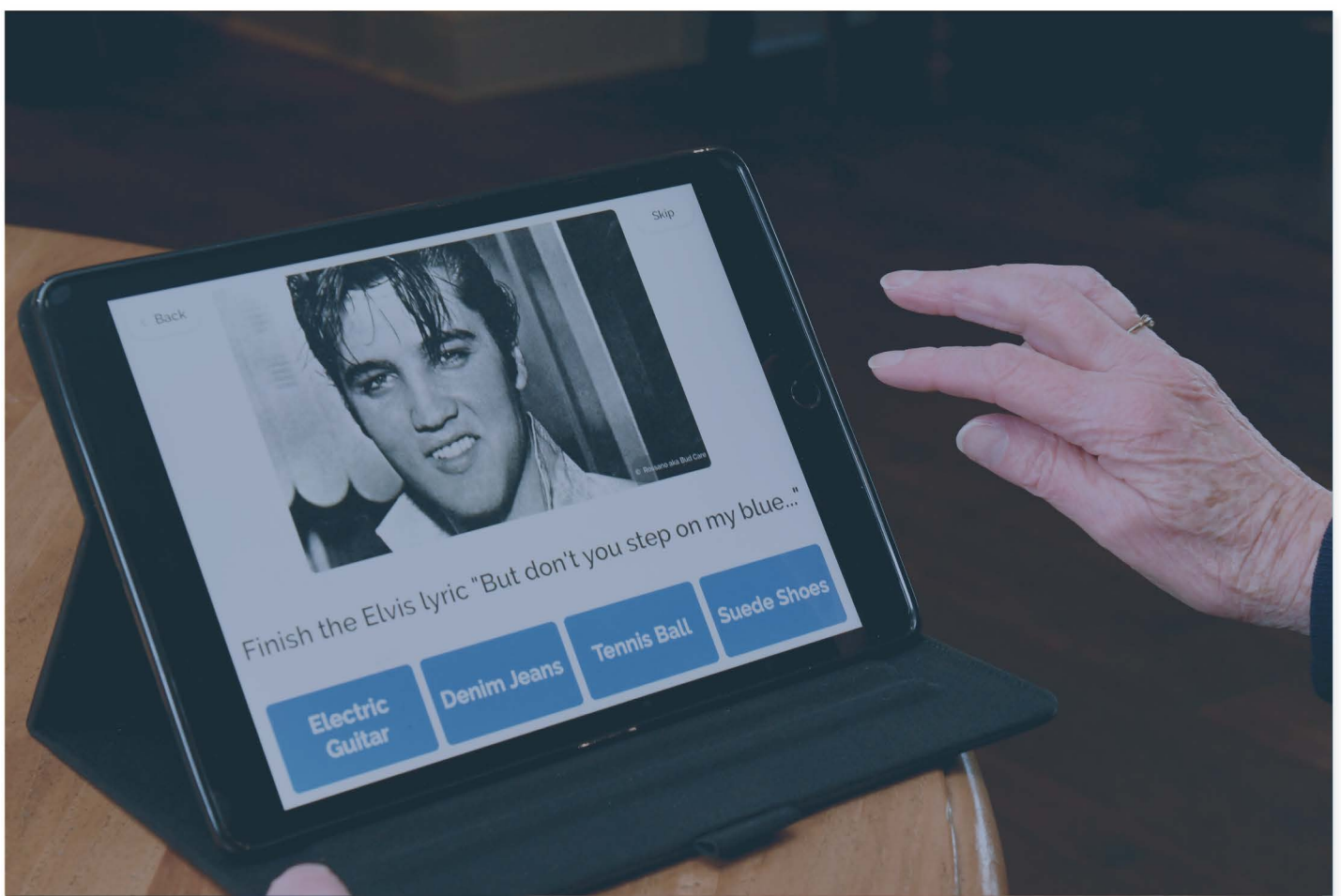
Improved well being of the person with dementia

92% of moderate dementia cases at least maintained the severity of dementia over 6 months; In **17%** of cases the severity of dementia reduced

42% of carers mention that the app has positively affected the PWD's confidence in some way

33% of carers reported the app had a positive impact on PWD's thinking abilities.

"Perhaps the greatest surprise of the trial is the apparent impact on severity of dementia. This we were not anticipating. Whilst it is a small sample it is a pleasant surprise and one which definitely warrants further investigation." - **Bruce Elliott**



42% of carers felt the app helped them communicate more with their loved one

Carers directly mentioned the memories the app brought up and the conversation created from those memories. This area will be explored in future research within primary and community environments. A small pilot has already commenced within nursing home environments delivering performance and usage data to families and personalised games to improve communication with families and patients

92% of carers felt the app made them more relaxed & 67% of carers felt it made them happier

At week 13, 'confidence in the future' scores remained stable among carers who had a positive sentiment, while they decreased among those with a neutral sentiment

A carers relationship questionnaire will be added to future study designs to investigate this area. General Study Theme to be address in future research

42% of carers felt the app helped them communicate more with their loved one

"He just felt more confident and happier".

"It was just so lovely seeing her being so proud of getting it right".

"She's quite confident. It's been quite shocking".

"I think this made him think 'oh yes, actually, I can do it' ".

This element will be part of future study designs in the community home care environment. Increased confidence forms a part of helping a PWD stay at home for longer.



"I think it brought us closer together, and at times she will go to give me a hug"

- Carer quote



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