

Testing voice activated technology for dementia

A report by **Playlist for Life**

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Playlist for Life is often asked for advice on listening to music through voice activated technology or for advice on listening to music for people who are not able to use physical devices.



We worked with 5 people living with dementia and 2 family carers to explore how Alexa enabled devices could be used to listen to playlists.

All participants agreed that using the device helped them listen to their music more regularly, with 4 out of 5 saying that it made listening to their music easier.



100%



All participants said they would recommend the device to other people living with dementia.



1. Introduction

Everyone with dementia is different and our experience shows that no single method of listening to music suits every person's needs. Some people are happy to continue with traditional methods of listening to music that they have always used whereas others want to try out new technology.

While devices like mobile phones, tablets and MP3 players work for many, some people are not able to learn how to use those devices or are not physically able to press buttons or type in requests for songs.

Playlist for Life worked with a small group of people with dementia and carers to test voice activated technology as a hands-free method of accessing a playlist, to understand how suitable these devices are for people with dementia, what improvements might make them better, and what guidance people might require to enable them to use the devices effectively.

2. The device



Echo Dot (3rd Gen) - Smart speaker with Alexa

Amazon £39.99

<https://www.amazon.co.uk/Echo-Dot-3rd-Gen20Charcoal/dp/B07PJV3JPR>

3. The testers



We worked with 5 people with dementia, two of whom were supported by a carer who also took an active part in the project.

Participants were recruited through our Music Labs group, made up of people who have expressed an interest in taking part in projects such as this.

The main criteria for acceptance were that participants had to have a diagnosis of dementia and were able to meaningfully contribute to the project or be supported by a carer to do so. All participants also had to have access to a Wi-Fi connection in their home in order to use the device. Beyond these criteria, participants were recruited on a first come, first served basis.

All participants lived at home. There were 4 male participants with dementia and 1 female. There was also 1 female and 1 male carer.



4. Testing method

We assigned an Echo Dot to each person with dementia.

Prior to testing each person with dementia or their carer had sent us a playlist of songs that were important to them. These playlists were loaded on to the Amazon Music accounts associated with each person's device.

The participants then tested the device over 2 phases.

Phase 1. Set up

Participants were sent the Echo Dot and given two weeks to set up the device and listen to the playlist. Participants were provided with written guidance and were given the options of using the Amazon Alexa app on their smart phones or on their web browser.

Participants were encouraged to contact the project leader for help and support during this time.

Phase 2. Testing

Once the initial set up had been completed and participants were able to listen to the playlist, they were encouraged to listen to it regularly over the next 8 weeks.

Participants were also given a series of new tasks they could use the device for and were encouraged to explore new ways of using it themselves.

Tasks included:

- Searching for songs that weren't on their playlist
- Searching for new types of music
- Adding songs to their playlist
- Making new playlists for different moods/genres
- Setting an alarm with a playlist

The testing period ran between May and July 2021. Participants were able to take part in one to one and group feedback sessions throughout the project and were sent an online feedback survey at the beginning of August.



5. Results

5.1 Overview

Participants needed help to set up the devices

All participants living with dementia needed support from a family member to set up the device and some carers also needed support from a Playlist for Life staff member. Although participants were mostly able to use the devices hands-free once they were set up, all participants first had to use an app to connect the device to the internet. The written instructions that come as standard with the device are very minimal and most of the set-up instructions are within the app. Some participants had to refer to extra instructions provided by Playlist for Life to complete the set up.

Voice interaction was useful and enjoyable, but didn't always work perfectly

Participants reported that using voice-activated technology felt strange at first but those who got used to it felt it could be very beneficial. Participants enjoyed the hands-free aspect of the device, the speed at which they could make requests and the social aspect of speaking rather than pressing buttons. However, all participants did experience some issues with communication and one participant felt they would prefer a more traditional hands-on device.

There were communication barriers

The device did not always understand commands or carry out actions as intended by the speaker. Multiple participants commented that the device did not pick up what they said at points and at least one participant mentioned that they felt they had to make an effort to speak more clearly for the device to understand them. This was sometimes frustrating and confusing for the participants.

What you get isn't always what you asked for

Some participants found that as well as the device not understanding them, it would sometime give answers they weren't expecting. If they asked for a particular song, it would play them a different version to what they expected. One participant said that when he asked for some information he felt the reply the device gave was incorrect and misleading.

Music works

While we were not testing the efficacy of music, participants mentioned the power of the music regularly throughout the project and all said they reacted positively in some way to the music. All 5 said the music improved their mood with some participants experiencing a range of other benefits¹. One participant said that although he didn't really use the device to listen to the playlist he had submitted originally, he enjoyed being able to ask for the songs he was in the mood for.

¹ See section 5.2 The Music

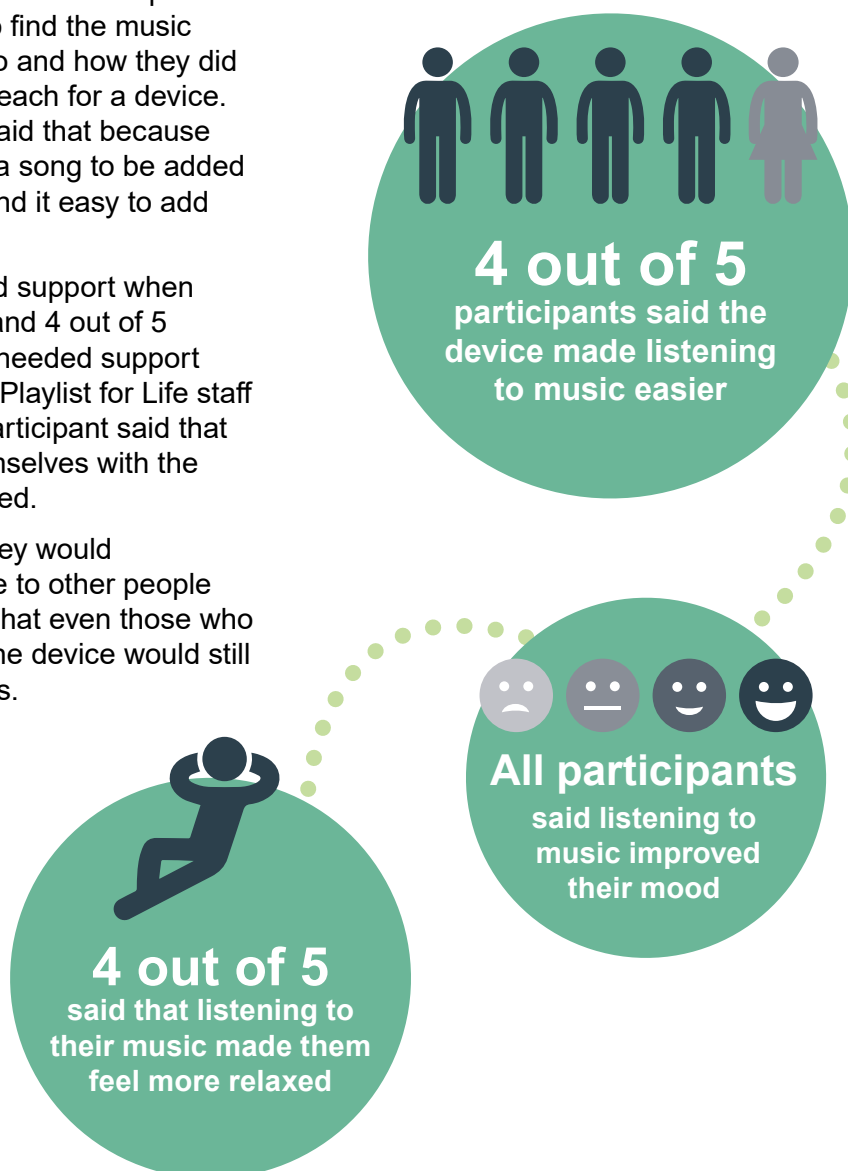
5.2 Survey results

The Device

- All participants agreed that the device helped them listen to their music more regularly.
- 4 out of 5 participants said that the device made listening to their music easier for them.
- 3 out of 5 participants said they found it easy to communicate with Alexa. This highlights that the voice activated technology can be helpful to some but will not be suitable for all.
- 4 out of 5 participants said they preferred voice activated technology to more traditional listening methods. Participants liked how fast it was to find the music they wanted to listen to and how they did not have to get up or reach for a device. One participant also said that because she could just ask for a song to be added to her playlist, she found it easy to add songs herself.
- All participants needed support when setting up the device and 4 out of 5 participants said they needed support from family, friends or Playlist for Life staff to use the device. 1 participant said that they were able to themselves with the guidance notes provided.
- All participants said they would recommend the device to other people living with dementia. That even those who had difficulties using the device would still recommend it to others.

The Music

- 5 participants said that listening to their music improved their mood
- 4 participants said that listening to their music made them feel more relaxed
- 2 participants said that listening to their music helped them communicate with others
- 1 participant said that listening to their music helped them to focus on other tasks
- 1 participant said that music helped them to be more active



6. In their own words

Being part of the project

"I feel this to be a worthwhile project as it has helped me to overcome the dark moments in my life by playing music I love." **John**

"I have spent the last 20 years helping others. I firmly believe this has fantastic advantages, with some minor drawbacks, for people with dementia, living alone or otherwise." **James**

"I felt that I was helping others by taking part in the project it made me feel special." **Carol**

Frustrations and challenges

"I got frustrated at times, at things she gave the wrong information and wouldn't listen to my advice." **James**

"The issue Carol has got is she can't remember she has to start each request with Alexa" **Malcolm (Carol's husband)**

"I started making another playlist but I can't remember what I called it. So those songs are lost." **Carol**

"My playlist is called John's playlist and when you ask it to play John's playlist it plays 'Elton John'. So, I said: 'Play my playlist on Amazon Music" **John**

"I would suggest a person with dementia, who has not been brought up with a computer, would struggle to set it up alone." **James**

Accessing music

"[The Alexa is] so fast at finding the music you requested, you can request a piece of music that comes to mind at a particular moment. It's so much easier [than more traditional things like CDs]. I always say Alexa, goodnight and she says nighty night, sleep tight." **John**

"I didn't think I would like it because I'm a touchy-feely person and I like my CDs but

I find I'm playing with the Alexa a lot more what I would going put a CD. I find I'm playing more music with the Alexa than getting up to put a CD on so" **Carol**

"I can ask the time, the day and date, the weather, or to play certain songs, without rising, going to the computer and starting it up." **James**

Wellbeing

"I often found John singing songs that he had been listening to and when he was feeling stressed, he would sing which seemed to help him relax and focus." **Maureen, Carer**

"I go to some really dark places [...] I just come in here and have a good cry and probably ask Alexa to play me something or play my keyboard and within 2 or 3 hours I'm back to normal again" **John**

"I also found it good for my brain, (this may be an unintended bonus) as I tried to recall the names of songs, and the artists/groups. It also brought back delightful memories, from bygone years. Some I would not normally have remembered." **James**

"While it seems programmed not to engage in conversation, it would reply with an appropriate comment, when I said good morning, or goodnight. I can imagine people who live alone would find these little snippets of conversation a pure delight. I began to appreciate it more and more. It did not intrude in my tranquillity but was available when I wanted to speak to it." **James**

"I sing in a male voice choir and we aren't allowed to use sheet music so before a concert I just come in here and ask Alexa to play the songs that we are singing and it brings the lines back to me the words that I've forgotten. That's how I use it, it's a wonderful bit of kit", **John**

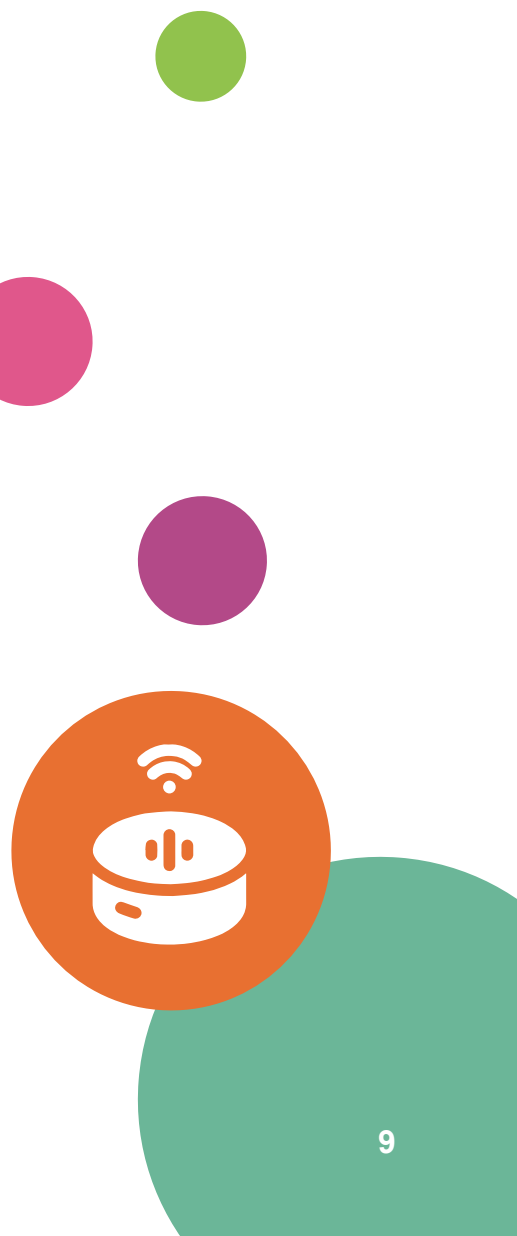
7. Feedback and support sessions

Throughout the project participants were in contact with Playlist for Life staff to support them in using the device. Support was given through a mix of emails, phone calls and Zoom calls depending on the participant's needs.

Participants also had the opportunity to take part in group feedback sessions. All participants said that they found these sessions useful. Participants found it helpful to hear how others were getting on and discovered new ways to use the device by hearing other's experience.

In a wider context, one participant caring for her uncle said the sessions helped her to see how other people deal with problems she had experienced or expected to have in the future as dementia progresses.

The challenge of getting feedback in this way was making sure everyone had the opportunity to share. All participants were very sensitive to giving each other the space to speak, however, they commented that this sometimes meant that by the time they could speak, they had forgotten what they wanted to say. We may have missed some valuable feedback because of this, and it highlights the importance of recognising the extra challenges people with dementia face when taking part in project of this nature. It is key to ensure there is a range of options for people to share feedback.



8. Conclusions and next steps

Voice activated technology can make listening to a playlist easier but is not a solution for all

Feedback showed that these devices can certainly be beneficial for people with dementia and can make listening to music easier and quicker. However, these devices will not be suitable for everyone. We will recommend that these devices can make listening to a playlist easier but will depend on the needs and abilities of the listener.

Communication can be a barrier

Difficulties with communication could make using the device stressful, particularly for someone with dementia as they may not understand why the device isn't behaving as expected. One participant has small strokes which result in slurred speech. He worried that if the device already has issues understanding him, this could only grow worse with his strokes and at some point the device would no longer be able to understand him.

Guidance is required to help people choose if the device will be suitable

We will begin to recommend these devices and provide information about them on our website. However, we believe that guidance on the pros and cons of these devices will be important when recommending these devices to people. People should be made aware of the limitations of the technology and the fact that the device will not always do exactly what is expected.

Support will often be essential

Support will often be needed when setting the device up. Many people with dementia will need the support of a carer or family member. While there are instructions within the set-up app that take you through every step of the process, there is some jargon used and people who are unfamiliar with

the terms may find it difficult to understand.

Often people without dementia who are unfamiliar with the voice activated technology will need support as well. Once the player is set up accessing the playlist is more straightforward, however many people will still need support to get used to the technology and figure out new functions and tasks.

Alexa devices are more suitable for finding and listening to a particular song than other devices

With most simple MP3 players you must listen to the playlist in a particular order. Previous research from Playlist for Life showed that MP3 players where songs could be found by clicking through menus on a screen were not particularly user friendly for many people with dementia. One of the things that participants seemed to like with the Alexa Device was that they could very easily find a particular song they wanted to listen to that perhaps wasn't on their playlist or they just wanted to listen to separate from the rest of their playlist.

Verbal interaction brought definite benefits for participants

One element of the voice activated technology that participants enjoyed was having something to interact with verbally. Participants mentioned how they enjoyed asking the device questions, the fact that it would reply to their requests and say things like 'good morning' and 'good night'. One participant also stated that interacting with the device to try and request songs that he liked 'helped his brain'. This test group was too small to draw any broad conclusions on this element, but we believe that the potential of voice interaction to reduce social isolation and improve communication and cognition merits further research.

(continued overleaf)

These devices have many applications beyond listening to playlists

Participants could see the benefits of using Alexa for other things beyond listening to their music, such as:

- Making calls
- Setting reminders to take medication, drink more water etc.
- Telling jokes to cheer people up
- Asking for the time and date
- Asking what the weather is like
- Having someone to ask questions and talk to, beating social isolation
- Spelling words
- Listening to audio books

Removing tech barriers may lead to uptake of music

All participants agreed that the device helped them listen to their music more regularly, with 4 out of 5 participants using the device at least once a week during the project. All 5 said they will continue to use the device after the project. We already know that setting up a music player is a major barrier to use. While some of the use may have been because we encouraged it, this does suggest that taking away that barrier can result in an increase in the use of playlists. We have seen this result in previous projects and still think that this would be a fruitful area for further research.

9. Suggestions to manufacturers

Include clearer and more in-depth instructions with the device

The device comes with minimal written instructions on set up. The small guide that comes with the device principally refers the user to the app and is written in very small text. One participant commented that this guidance was impossible for him to read. While the app takes the user through each step of the process it may be useful to include a larger print instruction sheet as an addition.

Provide better guidance for setting up devices without a smart phone

The instructions that come with the device push the user to set it up using the app. All participants in this project had smart phones and were able set up the device in this way. However, it is possible to set up the device using a web app. This option would be more suitable for many older people who don't use a smart phone and some clearer guidance on this option would be useful for many.

Improving voice activation software

Many participants commented that the voice activation technology could be improved upon. One participant commented that often the device would misunderstand commands, particularly if homonyms were used and make assumptions rather than ask for clarification. Another commented that the device did not recognise requests for songs in other languages. We were using the Echo Dot 3rd generation, which is not the most recent iteration of Amazon Smart speaker. It could be the case that many of these issues have already been addressed in more recent software updates.



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