People with Aphasia using a Self-Administered Naming Therapy app (SANTA): their perspective

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Author's Declaration

“I certify that this project report is entirely my own work and that it has not been submitted for any other academic award or part thereof, at this or any other educational institution. Where use has been made of the work of other people it has been fully acknowledged and fully referenced.”

Date:

Signature:
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1. Abstract

Background: For people with aphasia (PWA) the most common difficulty is the ability to name people and things (Papathanasiou et al 2013). A number of therapy techniques have been developed to help with word retrieval, such as facilitation therapy, which has long lasting results. However, it is only item specific. Furthermore, when working on naming in therapy, the average number of words treated per session ranges from 30-40 (Snell et al 2010). Software applications have the potential to allow PWA to work on large, self-selected vocabularies. However, most current applications have fixed vocabularies. The SANTA app enables a person to self-select items and has unlimited access to words they want to practice.

Objectives: This study evaluates perceptions of the SANTA app and investigates how those involved in the study found using the app; how they got on adding words; when they practiced.

Methods: Six participants were involved. All were sourced from a HSE clinic. They ranged from moderate to severe chronic aphasia. The methodology involved nine interviews; six with PWA and three with carers. An interview guide was designed and semi-structured interviews were carried out. Ramps were employed to help those PWA who had difficulty communicating.

Results: Three main themes were identified; reactions to app, using the app and significance to aphasia, with nine sub themes. The general feeling towards the app was positive. Participants identified benefits; finding words and speaking. A limitation was the lack of a delete button.

Conclusions: The PWA felt the SANTA app brought about improvements to their communication. One participant recognised reminiscence therapy as another use for the app.

Keywords: PWA, SANTA app, naming, communication.
2. Introduction

According to the Irish Heart Foundation, suffering a stroke is the third leading cause of death in Ireland. A person who survives a stroke may have impaired communication, which is commonly referred to as aphasia. Aphasia can result in social and psychological strain affecting relationships and social participation in life (Dalesman et al 2010). For people who suffer aphasia the common difficulty is the ability to name people and things (Papathanasiou et al 2013). Clinicians who work with people with aphasia (PWA) understand and acknowledge the frustration caused by a communication difficulty (Nickels 2002). As clinicians we want to enhance PWA’s level of participation in society and regain their confidence in speaking (Nickels 2002).

This review will look at naming therapies, in particular facilitation therapy. It will evaluate service delivery, computer programmes and how PWA find using them. What apps are already available to them, their limitations? Why including PWA into research is vital and finally the importance of this study.

2.1 Therapies for naming:

Throughout the years a number of therapies have been developed to help increase word retrieval. These include facilitation therapy, semantic feature analysis (SFA) and circumlocution-induced naming (CIN). They have one aim - to try and improve word retrieval and communication. SFA therapy guides the client to produce words that are semantically related to the target word (Boyle 2004). CIN promotes the client to “talk around” the item they want to name (Francis et al 2002).

Facilitation therapy consists of semantic or phonological tasks. A number of techniques are used as part of these, for example semantic therapy consists of carrying out activities matching the meaning to the word form either in spoken or written tasks (Morris and Franklin 2012). Phonological tasks include phonemic cues or repetition in the presence of the picture. This is similar to priming (Martin et al 2006), which is a strategy that produces benefits in word retrieval. This approach increases accessibility to the word. Compared to SFA or CIN it is quicker and more immediate for the client. Howard et al (1985) found long-lasting results with
facilitation therapy (cited in Howard et al 2006). However, the gains made are mainly on treated words (Best et al 2013). As treatment does not generalise speech and language therapists have been targeting “functional” and “personally relevant” words in therapy (Renvall et al 2013).

2.2 Service delivery:
In relation to service delivery there are very few studies available to guide clinicians in deciding how often, how much and how long therapy should be distributed, and how many words should be targeted in therapy (Snell et al 2010). Snell et al (2010) reports that studies indicate that an intensive approach is best. However, in the current economic climate this may not be an option. When working on naming, the average number of words treated in a therapy session ranges from 30- 40 (Snell et al 2010). That is exceptionally small given a person’s vocabulary consists of thousands of words. Snell et al (2010), investigated whether the number of words treated in therapy had any impact on the outcome for the patient. The study revealed that regardless of the severity of anomia that when more words were given, more were learned. This raises an interesting question with regard to facilitation therapy. Speech and language therapists may be able to provide more words during therapy (Snell et al 2010). This study reveals that more can be done for PWA, but it is not a likely option given limited resources.

2.3 Computer based programmes and PWA:
Research suggests that computers can provide an efficient means of delivering therapy (Mortley et al 2003). Petheram (1996) highlighted that people who had been given therapy software to work on at home were motivated to work for up to three hours. However, results in relation to improvement were limited (cited in Morley et al 2003). Mortley et al (2003) investigated the practicality of using computer therapy in the home. The result revealed that all participants were able to use the software, indicating that therapy outside a clinic setting is manageable. One partner claimed “it’s giving me my husband back” (Mortley et al 2003, p. 1047). Suffering a stroke can place a huge strain on a relationship. An outcome like this boosts the theory of the relevance of computer-based therapy in the home. Participants chose when they
wanted to do therapy, and they valued this decision making. They also chose the intensity of the therapy. This approach gave clients a sense of autonomy.

MossTalk Words was used to investigate benefits on chronic aphasic patients using cued naming exercises made through clinician guided and when patients worked independently. The results highlighted strong gains were made. Emphasizing that independent work on computers can be effective along with clinician guided therapy (Fink et al 2005, p. 947). A similar study using cued naming therapy by Ramsberger and Marie (2007) was carried out. The cues in this study were self-administered and clinician guided. Three out of four of the participants improved in their naming performance on trained words, highlighting that self-administered cued naming therapy can be beneficial to PWA. Research is showing that the use of computer treatment for word finding is having positive effects and without the support of computers it would be impossible to achieve the amount of therapy needed (Mieke and Van De Sandt-Koenderman 2011).

Computers can increase the quality of service delivery making it more independent and personal. As technology advances and becomes more and more a part of life, it can be utilised in remediating anomia. Technology is advancing and helping people’s lives making it easier in a variety of ways and this is true for PWA (Petheram 2004).

2.4 What is already available?

The Tavistock Trust for Aphasia website summaries apps that are available to PWA. An example would be the Naming Therapy app. These come with limitation. With some apps a person can add their own words but they still only allow for a certain amount of words per task. Naming Therapy allows for 10-100 nouns per exercise. Other apps require a speech and language therapist to add words. Again, these apps, along with therapy, are limiting PWA to a set number of words when there are thousands used daily.

2.5 Qualitative studies:

It has been shown that despite the communication difficulties of PWA they are being recruited to participate in research (Simmons-Mackie and Lynch 2013). It is becoming more and more recognised that PWA have an abundance of valuable
information (Simmons-Mackie and Lynch 2013). The social model recognises that people with a disability are seen as experts in their conditions. They are simply not patients but people (Byng and Duchan 2005). They know what they want to improve and what will be of most benefit.

Luck and Rose (2003) put forward a strong argument for involving PWA in studies. They suggest that by excluding them from research we are “reinforcing participation barriers,” (Luck and Rose 2003, p. 221) and by including them we are validating their opinions. Worrall et al (2011) carried out a study to find out what services PWA want. Participants described feeling frustrated, isolated and depressed with their inability to talk. They wanted to be able to say certain words or names, for example, a child’s name (Worrall et al 2013).

2.6 Summary:

A number of areas have been described that all relate to facilitating PWA and their difficulty with naming. Facilitation therapy has limitations. The fact it does not generalise to untreated words is a huge concern. The use of computers as a treatment option; the success they have brought and how people feel about computer programmes has been positive. However, there have been no qualitative studies undertaken evaluating how people feel about using a self-administer naming therapy programme as a form of treatment. Worrall et al (2011) points out exactly what PWA want to work on, which is being able to communicate. Even for people who are able to communicate to a certain extent through compensatory methods such as gesture or drawing their ultimate goal is to speak (Nickels 2002, p. 2002). There is huge potential to develop aphasia therapy. Snell et al (2010) recognised that more words could be targeted in therapy. The issues behind the invention of the apps have been addressed but there is still potential for expansion. Technology is ever improving and the development of a web based app where a person can self-select their own items and have unlimited access to the amount of words they want to practice seems a likely step forward. As PWA are experts in their own disability it seems only right to get their views on this new software.
3. Methodology
The study evaluated the perspective of six PWA who used the SANTA app following a four to five month period of usage.

The aims of this study were:

- To evaluate PWA’s perceptions of the SANTA app.
- To investigate how they reported using the app; how they found adding their own words and when they practiced.

It is important to point out that the project was done over three phases. Designing the app took six weeks, and involved two of the participants. Involving individuals with disabilities in designing products is vital as it helps to develop technologies that will work for them (Kane et al 2012). This part of the project included the follow up study, in cooperation with three other student researchers. It is important to mention this as there had been no previous involvement with the study, therefore minimizing bias.

3.1 Research design:
The research design was mainly qualitative with a mixed methods approach. This type of research helps gather an in-depth understanding or feeling on a subject. The mixed methods approach was used due to the varying abilities of the participants and was integrated with the qualitative information. This strengthens the validity of the data gathered from the PWA. Using a mixed methods approach suggests that their strengths can combine to make a better study (Finlay and Ballinger, 2006). As this study consisted of varying methods, the technique of triangulation was used reducing “the risk of chance association and of systematic biases,” (Maxwell, 1996, p. 93), increasing the rigour of the research.

3.2 Participants:
Six participants were recruited. All were sourced through a HSE clinic and selected through judgement sampling, one of the most common techniques used in research. It requires the researcher to actively select an appropriate sample to answer the research question (Marshall 1996). The intention is to recruit participants who have direct experience or specific expertise in an area that will facilitate the best answer
to the question posed. Each participant was given the SANTA app to use for 5 months with weekly visits from an RA to assist in use for the first three months.

In terms of sample size, a small number of participants were chosen. According to Marshall (1996) for qualitative research an adequate sample size is one that addresses the research question appropriately. As the ultimate aim of the study was to gain the perspectives of PWA, this sample size gave enough data for that.

The inclusion criteria consisted of:

- Aphasic patients following CVA
- At least six months post CVA see Table 1 with stable naming
- Naming ability 10-70% on naming subtest of the Comprehensive Aphasia Test
- Repeat 80% nouns on repetition subtest of Comprehensive Aphasia Test
- Not to be receiving speech and language therapy during the study

Each participant was informed of their right to refuse to take part or withdraw from the study. Initials were used as names to protect the identity of participants.

Profile on participants:

**PM:** Lives at home with his wife and has two children. He taught science at secondary school level. He has a keen interest in gardening, reading and sport.

**BA:** Lives alone and drives, which allows her to be independent. She was a rep for a cigarette company. Her interests include going to the seaside.

**NA:** Is a widow living in a nursing home. His children live nearby and visit regularly. He was a security man and service assistant for hotels. He has a keen interest in music.

**MJ:** Is a widow living alone. He has six children who visit him regularly. He was a building contractor. He found it difficult to converse with people after his stroke. He became concerned with what people would think of him. He avoided social situations as a result and reported feeling frustrated with his speech, reading and writing.

**CV:** Lives with his wife. He has three boys, a daughter and grandchildren who visit regularly. He worked in the Department of Agriculture. He wasn't long retired when he suffered a stroke. He had been an active man with many hobbies and interests.
He found it difficult to accept his dysphasia and physical disability. He still has a keen interest in music.

**CM:** Lives with her husband in a house near her son and his family. She was an exam invigilator in an Institute. She continues to participate in her local Bridge Club.

Table 1: Participant details

<table>
<thead>
<tr>
<th>Participants</th>
<th>Gender</th>
<th>Age</th>
<th>Months post stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM</td>
<td>Male</td>
<td>65</td>
<td>46</td>
</tr>
<tr>
<td>BA (ramped)</td>
<td>Female</td>
<td>75</td>
<td>21</td>
</tr>
<tr>
<td>NA</td>
<td>Male</td>
<td>68</td>
<td>5</td>
</tr>
<tr>
<td>MJ</td>
<td>Male</td>
<td>89</td>
<td>38</td>
</tr>
<tr>
<td>CV (ramped)</td>
<td>Male</td>
<td>72</td>
<td>70</td>
</tr>
<tr>
<td>CM</td>
<td>Female</td>
<td>70</td>
<td>13</td>
</tr>
</tbody>
</table>

Only three carers were interviewed. This was because they were the only ones present at the time of the interviews.

Table 2: Carers information

<table>
<thead>
<tr>
<th>Name:</th>
<th>Relationship to subject</th>
<th>Related to which subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>NM</td>
<td>Care Assistant</td>
<td>NA</td>
</tr>
<tr>
<td>CI</td>
<td>Wife</td>
<td>CV</td>
</tr>
<tr>
<td>MG</td>
<td>Daughter</td>
<td>MJ</td>
</tr>
</tbody>
</table>

3.3 Ethics:
Ethical approval was obtained and informed consent was gathered from all. This was achieved using aphasia friendly consent forms (see appendix A). All were informed of the purpose of the research. This helped them decide if they wanted to be involved. Permission was sought to accessing health records for information like the date of CVA, and to make video and sound recordings.

3.4 Assessment:
The participants were visited on two separate occasions. The first visit consisted of administering the Boston Naming Test (BNT) (Kaplan et al 2001) and retesting the
names on the app. As there were six clients, each of the researchers took two main clients. Researchers worked in pairs to ensure inter-rater reliability. Meeting the participants for the BNT enabled the preparation of ramps for the subjects that would need extra support during the second visit, which consisted of interviews.

3.5 Materials:
An interview guide was prepared (see appendix B). The reason for this was to keep the interviews relevant and consistent. In addition ramps were developed to gather a response from participants that were unable to verbally express themselves to produce spontaneous answers. According to Luck and Rose (2007), if communication supports are not put in place for PWA then interviewers may not obtain the full extent of information from their participants. There were multiple choice questions, and they produced answers covering a wide spectrum (see appendix C). The ramps were only used when needed.

With the permission of the interviewees, we were able to video and audio record during interviews. PWA employ a number of strategies to communicate, be it facial expressions or gestures. All are deemed “total communication strategies”. The video recordings allowed further analysis of the answers and the way they were given.

Prior to the commencement of the interviews a script was read out informing the participants of the importance of honesty in their replies about the app (see appendix D). This increased the validation of the interviews by informing them that there was no ‘right or wrong’ answer.

3.6 Interviews:
Nine interviews were conducted involving the six participants and three carers. The type of interviews employed was semi-structured. This type of interview allowed for flexibility as questions not included on the interview guide can be asked (Bryman, 2004). It allowed the interviewer to get the interviewee to elaborate in a certain area, thus gaining more detail. We listened carefully during interviews and picked up on certain words, views or feelings expressed, that allowed us to explore an area more.

After interviewing the participants their carers were spoken to. All interviews were
conducted alone with the clients in their home to avoid the possibility of a spouse or career ‘speaking for’ the person.

3.7 Procedures and Data reductions or analysis:
The method of analysis incorporated was thematic analysis. It organises and describes the data in rich detail (Braun and Clarke 2006). It discovers themes embedded in the research; these themes capture an important piece of information in the data that relates to the research question and represents a patterned response from interviewees (Braun and Clarke 2006). The themes were derived from the data through an inductive approach. This procedure identifies themes that have strong links to the information gathered. It is therefore data driven. It searches the data set to find repeated patterns within the interviews. The phases involved in analysing were:

*Familiarizing the data:*
When the interviews were completed they were transcribed. They were then all compared for inter-rater reliability. Video recordings were checked for total communication strategies and these were added into the transcripts. The data was read through numerous times and eventually broken down into statements for each of the interviewees (see appendix E). This enabled the researchers to examine closely and generate ideas about the data and note the most relevant parts of the information from each of the participants.

It is important to state that there were three groups of data:

- spontaneous responses
- ramped responses
- carers’ responses see Table 1 and 2

*Generating initial codes:*
This entailed making initial codes from the data. These codes formed an interesting aspect that came from the data set (Braun and Clarke 2006). This was done manually by writing notes on the side of all the statements. It was noted during this stage if there were similarities in the data between participants. This was done by marking the name of the participant beside the code for reference back at a later stage. As this coding process is part of the analysis this helped organize the data into
meaningful groups that may in the future have formed a theme later (Braun and Clarke 2006).

**Searching for themes:**
Once all the data was coded, each of the participants were colour coded, see Table 1. Only the statements from the spontaneous responses were used at this stage to form the themes, see Table 1. We began by organizing the related statements into themes.

**Reviewing themes:**
The themes were then reviewed and refined. This was done by first reading through each of the themes separately, noting that some themes were too big covering a number of different themes and others too small. They were then amended creating new themes or switching themes around.

**Defining and naming themes:**
The final stage involved grouping the themes and finalizing the names of the overarching themes and sub themes. This stage involved discovering the ‘essence’ of what each theme was about and what aspect of the data each theme captured (Braun and Clarke 2006). The sub themes were matched during a brainstorming session between the researchers thereby defining what linked all the sub themes together in order to name the overarching theme.

Once this stage was complete the ramped answers see Table 1 from the participants were added to the themes created (see appendix F). The carers responses were then used as additional information to support or show contradictions between responses given.

The next chapter contains the themes in more detail and how the data came to represent each theme.
4. Results

This chapter includes the overarching themes and sub themes that emerged from the data following the analysis. It is important to note that after a number of weeks NA, who was in a nursing home, lost his phone. The findings are reported below in terms of three themes and nine sub themes. Given that some participants required ramps to communicate their answers will be signified using the symbol (*) throughout.

*Table 3: Themes and sub themes*

<table>
<thead>
<tr>
<th>Reactions to the app</th>
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<tbody>
<tr>
<td>• Comments</td>
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<tr>
<td>• Technology</td>
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<tr>
<td>• Unexpected Outcomes</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Using the app</th>
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</thead>
<tbody>
<tr>
<td>• Support</td>
</tr>
<tr>
<td>• Support</td>
</tr>
<tr>
<td>• Patterns of use</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Significance to aphasia</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Benefits</td>
</tr>
<tr>
<td>• Barriers</td>
</tr>
<tr>
<td>• Client recommendations for app</td>
</tr>
</tbody>
</table>

4.1 Reactions to the app:

The participants offered varied opinions on the app. They ranged from being optimistic to uncertain about its capabilities. The app was new to them all. They had never seen anything like this before. It emerged that the participants all had their own uses for the app with the answers from two people being of particular interest. This theme was broken down into three individualistic sub themes; comments: the majority of participants found the app to be good, with one person unsure about it. NA said he was “indifferent” (*), that he neither liked it nor disliked it, but said it definitely was not ‘boring’ (*). Two participants found the app helpful.

“That’s helpful, I think it’s very helpful,” (PM).

This suggests the app was useful in continuing their learning. The other participants felt the app was enjoyable, fun and both CV and BA said it was “interesting” (*). BA
stated: “You can have, you know you can have eh fun with them you know.” All expressed a desire to keep the app.

**Technology:** all the participants needed time to adjust to it. MJ admitted: “It took me a while.” NA, PM and CM all offered similar responses. None were totally familiar or at ease with technology.

“If you’re using it you’ve got to have the knowledge of how to use it,” (NA).

“I don’t know enough about electrical things,” (CM).

While participants did not have much experience with technology, the findings were that prior experience was not a prerequisite for using the app. All agreed it was easy work out how to use it, “I find it easy,” (PM). BA and CV found the categories (*) easy. A shortcoming was highlighted. There was no delete button and the “scrolling and adding pictures” (NA*) function could be improved. It was also noted that the speed of the app was too slow (*).

**Unexpected Outcome:** two participants said the app helped their memory.

“I can remember that from years ago, sort of thing. It was going back in the mind then from years ago and it clicked in the head,” (NA).

When asked to elaborate further he said: “Just an old memory, my old memory.” CM had a similar response, explaining that it helped her memory.

4.2 Using the app:

Another key theme that surfaced from the data related to using the app. Three sub themes emerged as part of this theme. **Support** was essential when using the app. The participants were unanimous on this point.

“I hadn’t a clue what I was doing, but B would show me,”

(CM).

NA had a similar response. He struggled because of the lack of support given to him when using the app. He made it clear he need someone to help him.

“The idea is to link in with somebody at the time…. It would have been a help to me.”
Support suggestions ranged from getting help with learning to use the app to having a person encouraging them to keep using it.

**Why use the app:** one participant described how he wanted to be able to remember and say the names of people.

“You see there’s a lot of people and things locally around here you see and I just can’t get the name right,” (MJ).

He added: “I want to talk about people.” This was a major concern for him. He lived in a rural village and knew the people. Getting their names right was important to him.

The final sub theme incorporated a number of interlinked replies such as, when they used the app, the length of time they used it and how they used it. This gave an insight into the **patterns of use.** Two participants explained how they used the app for feedback.

“It’s a way of am of finding out am finding out what was right or wrong,” (PM).

Likewise with BA, who used to check to see if she was right (*) by saying the word first and then pressing the picture. Each participant explained at what part of the day they used the app. Three used it in the evening. NA preferred mornings. Usage varied with MJ between morning and evening. They further explained how much time they spent practicing daily, or the number of times a week they used it. MJ, CV* and NA only spent a couple of minutes to half an hour using the app, while CM and BA* spent an hour. CM said she used the app every second day, while BA used it everyday (*). CV and BA spoke about the categories they liked. CV liked the music section (*) while BA liked the breakfast and seaside category (*). The majority used all the categories,

“No I used them all just to get the best way of doing it,” (NA).

4.3 **Significance to aphasia:**

The last resulting theme related back to the reasons for the app. All participants identified a number of advantages. They found things that restricted their use with the app, and also who the app would be most valuable to.
The strong overall message was that the app brought about a number of benefits to the communication of the participants.

“Yeah oh it’s a great difference. Because I wouldn’t be able to talk otherwise,” (MJ).

“Shur I’d never have known if I was good or bad at those things if I hadn’t got the...app, (CM).

“The words come easier for me, the pronunciation of type of word,” (NA).

Another benefit highlighted was that they could choose their own words and practice the items they were most interested in.

“Using subject that were I knew.. rather than ones I’m not used to at all... ones that I can use that I would be interested in generally,” (PM).

Both BA and CV found it helped them to find the right word when speaking (*).

**Barriers** were identified.

“I think my biggest problem is spelling. It would take me ages to spell words into the box, (CM).

“Well naturally I wouldn’t be able to read,” (MJ).

The difficulties acknowledged are of huge importance and relate to the difficulty they experience as part of having aphasia.

**Client recommendations for users:** the general consensus from participants was that the app would suit everybody, in particular people recovering after a stroke.

“I’d recommend it 150% for anybody that’s had a stroke. I’ve had two strokes and that’ll give you an idea and I’d recommend it,” (CM).

4.4 Carers Response:

**Comments:** CI and MG found the app to be good and helpful. They saw how the app can be of use to PWA. This complements what PM and CM said. **Technology:** NM explained NA had difficulty with the technicalities of the app, suggesting he kept pushing too hard. This is compatible with NA’s answer. CI and MG spoke about how easy the app was to use. They did comment on the lack of a delete button, and the
quality of the voice. Concerning support, NM stated NA needed assistance to add the pictures. CI and MG offered similar responses.

“Well he couldn’t add the things on himself. I used to add them on for him,” (MG).

Why use the app: MG’s response fitted MJ’s answers for the reasons he wanted the app.

“The one thing that’s catching him is names of places and names of people - you know, and it bugs him.”

CI stated: “I just want him to improve you know.”

Patterns of use: NM said they used the app 3 or 4 times a week for around five minutes, which differed with NA’s statement, although he did say he tried using it by himself. Benefits: CI felt the app had not made a difference, “personally I dunno”. Her partner thought otherwise. He felt it had made a difference to his communication (*). MG spoke about how MJ enjoyed using the app and practicing.

Client recommendations: Both MG and CI agreed that the app would be a help to people after a stroke.

“I would definitely say that it will you know. It mightn’t in our case now, but I would say that it would be a great help to people in say when CV got the stroke first I’d say that now,” (CI).
5. Discussion

Introduction:
This chapter will address the research question while referring back to the literature to support or challenge any points made. The discussion will be organised under the main themes.

5.1 Reactions to the app:
The response to the app was positive, from participants and carers. The perceptions drawn from PWA were that no matter how long after a stroke they wanted to improve the quality of their life.

“If I don’t... keep using the app I won’t be able to keep doing little things that I want to do ... I think I’ve all the time to keep learning and I think the only way I can do that is by the app” (CM).

That statement highlights the desire to keep learning and improving. She won’t give up. She spoke directly about the SANTA app and how it was helping her to learn.

Services available to PWA are limited. Therapy sessions are not frequent enough. According to Hersh (2000), PWA can experience anxiety at discharge from therapy as they feel they need ongoing assistance. The Royal College of Physicians on stroke rehabilitation (cited in Hersh 2000), reported that once patients and carers were back home they felt abandoned, and would prefer to have continued input from therapy. Since we know continuing therapy is not an option, we need to look into other areas that can help the recovery process or quality of life. Given the feedback from participants in the study, the SANTA app could be an invaluable aid.

“It helps again anything... that would help you to learn...especially at the beginning..... it’s very important really,” (PM).

Hinckley et al (2013), report that studies show PWA want continuous information about new learning communication techniques. They want any kind of resource that would help them communicate more effectively. The SANTA app fits the
requirement. PWA in this study confirmed that the app was helpful and research shows that PWA want to learn.

Some participants did not view the app as a mere learning tool. They saw it as something they took pleasure in using. The app does not have to be seen as something that targets impairment. Two participants viewed the app as interesting (*). MJ stated: “Some things I enjoyed”

His daughter confirmed this:

“He definitely enjoyed it and he practiced. He liked it and he liked getting better.”

Not all participants had the same views. Five out of six participants, and two out of three carers, expressed optimism about the app. From all the feedback, it is fair to say the SANTA app is a source of hope for PWA.

The reaction to the app fits with current literature relating to computer therapy. Mortley et al (2003) reported that participants needed time to familiarise themselves with the new initiative, and in time found it "fine". Similar responses were given in this study.

“The app am it just took me a while to get used to it…I wouldn’t be used to...those.. gadgets.. I’m not used to mobiles and all that stuff,” (PM).

One participant spoke about acquiring the "knowledge" to use it and get the best from the app. This is an important remark to consider if it is going to be introduced to PWA. We must ensure that they are taught how to use the device properly, and not be left without help or direction. McCausland and Falk (2012) (cited in Gitlow 2014) identify a lack of education as something which limits older people engaging in technology.

Melenhorst et al (2006) (cited in Rodeschinin 2011) explained that each cohort will have different views on technology. People unfamiliar with technology may avoid using it because they think it will be too ‘hard’. Yes, it took them time to adjust to the app but this related back to the fact that some people of this generation do not engage with technology on an ongoing basis and therefore may not be up to date with the latest invention (Rodeschini 2011).
We must acknowledge that technology is forever advancing. People who are not well acquainted with it may be unable to engage with it. The participants in this study made that clear.

Technology can be an invaluable aid moving forward. Because of the rate of progress people, no matter how old need to be helped, be taught or educated on what is available to them. Such pieces of equipment are the future a new way of thinking about and expanding therapy. Mortley et al (2004) pointed out that people with chronic aphasia made gains on using computer technology and all participants claimed an improved ability to communicate. The findings in this study can strengthen the case for using technology with PWA. It may take time for older people to get used to it, but it is manageable with the right help and direction.

“I can’t say there’s anything that was difficult... once I knew the sequence of using it.. was ok,” (PM).

BA also commented that the app was easy (*). Research also states that the “greater the number of commands using technology the lower the ability for the elderly to employ the device,” (Rodeschini 2011, p. 523). The fact that the participants perceived the SANTA app to be easy to manage was important.

“Pressing the button on the top, it was dead simple after that you’ve to think of nothing,” (CM).

Parts of the operation of the device were difficult. This relates to older people using small devices as they find them difficult to adapt to (Rodeschini 2011). Another negative remark made related to the fact the app did not have a delete button, which impacted on a participant's learning.

"I kept making a mistake again and again on those ones really,” (PM).

It was stated by a participant that being able to see the picture and use the speaker was of huge assistance in retrieving words. This links in with the idea of repetition priming which according to Martin et al (2006) facilitates word retrieval by hearing the spoken name and repeating it.

Two participants found the app made a difference in terms of remembering things. NA enjoyed looking at the pictures. They brought back memories of past event or things he was interested in. This showed the app had other uses besides naming.
5.2 Using the app:
The participants took delight in testing themselves using the app. They liked the way it would tell them if they were right or wrong.

“It does, it tells you whether you are right,” (PM).

Two participants, MJ and BA* pointed out that they would speak first and then check if they got the word correct.

“No, I’d leave it ‘til I talk myself and if not, I’d question it,” (MJ).

This may be a negative outcome of using the app, as the participants are not using it in the correct manner. Instead of repeating after the voice they are saying it first. Another important element of using the app was deciding when people wanted to practice. This varied among participants. People have different schedules or routines. The majority chose to use it in the afternoon.

“Well generally speaking in the afternoon I go asleep because I tired.. I was doing that since had my stroke... I’d feel much better after nap,” (PM).

The main point taken from this and another participant’s response was the reference to "tiredness". It is important to recognise this as post-stroke fatigue is common with people after a stroke. According to the national stroke association it affects between 40-70% of people following a stroke. Participants chose the time that suited or fitted their lifestyle instead of having to work around a fixed schedule.

“You know, the weather’s bad and he’s not out so he will quite happily put on the thing and he’ll practice,” (MG).

All participants identified the need for support when using the app. This was not surprising, as this has been identified in previous research. According to Mortley et al (2003) participants perceived the role of the speech and language therapist as crucial in motivation and reassurance. This is of huge significance as it highlights that PWA need support when using the app.

“Like asking what do you what are you interested about this and what about this...because I forget about things I can’t remember things,” (PM)
The environment he lived in impacted on NA’s use of the app and he found it difficult to get help.

“Then trying to get the time for the girls to come and do it, that’s another thing.”

The surroundings are crucial for PWA when using something like the SANTA app. CV used it with his wife all the time (*) as he needed physical assistance. It was clear from the participants that when the RA called round they seemed to use it more.

“No, she (RA) nearly did it with me all the time and there was nearly always a category that she made me study,” (CM).

This is inter-connected with motivation. Little progress in treatment could be seen if there is little motivation from a client (Shill, 1979). One participant spoke about how the app worked for a while, but perhaps he did not work enough with it. He stated the support the RA gave was hugely important to him. Bearing that in mind, differences between people has to be considered. While the majority of participants considered support to be a requirement for using the app, one spoke about using the app on his own. He preferred it that way.

“I stayed on my own like you know and I’d be concentrating,” (MJ)

It gave him a sense of autonomy, his daughter explained.

“Sometimes when I’d be testing him on ones like them, you know, he’d seem a bit anxious,” (MG).

This relates to the Mortley et al (2003) study which stated therapy “made people feel as if they had returned to school,” (p. 1032). By enabling the person with aphasia to use the app on their own gives back some empowerment, a sense of control.

The feedback identified the importance participants placed on getting the names of people right. In saying this we must remember that the participants did struggle to put the pictures on to the app, which is one of the downsides to the app. MJ’s daughter explained how she did not teach him how to add the pictures as she felt it may complicate things.
MJ spoke about living in a small community where he knows virtually all the people. He explained that he gets frustrated when he cannot remember the names of people.

“You see there’s a lot of people and things locally around here you see and I just can’t get the name right,” (MJ).

The ICF framework can be seen to play its part in this as its purpose is to enhance quality of life. Aphasia can limit a person’s lifestyle. Communication can be difficult, thereby impacting on their social interaction. This interlinks with Activities and Participation within the ICF. MJ expressed a desire to converse with people, to be able to speak and say their names. He wanted to be sociable. Worrall et al (2011) confirmed that PWA have a desire to communicate, in particular their needs and opinions. They spoke about how communication rehabilitation needed to be linked to real life, which is exactly what MJ suggested.

Worrall et al (2011) described how PWA had a desire to know certain words. Hinckley et al (2013) highlighted in their study how a man had difficulty coming up with words. “I find it difficult to hit a certain word. So that’s what I need help with,” (p. 314). This can relate to MJ’s situation with people’s names and wanting to get them right.

By increasing PWA’s ability to speak, and allowing them to be heard, will have a positive affect on their confidence. Findings show that social participation is a concern and change is due to occur in the way PWA receive treatment (Dalemans et al 2010). Given the response by MJ, who wants to engage in his community, finding the SANTA app useful for getting the locals names right was a crucial start point.

“No well it’s important.. to be able to say something and know exactly what I’m saying.”

CV’s wife explained how she wants him to improve and to know what he is looking for at the table, for instance, when he asks for sugar. Not only do PWA want to see improvements, but so do their partners or loved ones. She said she can understand him, but others would not. This correlates with the research. According to Winkler et al (2014), carers expressed their level of activities and participation is also affected and they missed being able to discuss plans with their partners or even have
arguments. The majority of carers miss their partner from pre-stroke, mainly due to their communication impairment which is their primary means of self-expression.

5.3 Significance to aphasia:
There were benefits to the app. Each of the participants felt the app brought about an improvement in their communication.

“I can speak more you know,” (BA).
“I feel my communication is very good, over the last 3 months I’ve gotten way stronger, 6 months ago I was very poor,” (CM).

Participants felt there was an improvement in their communication, highlighting that it can be a great help. It will enhance their confidence when speaking with others which will have a knock on affect in increasing their socialisation. According to Worrall et al (2011), PWA commonly make social goals to feel at ease and accepted.

Two participants felt finding the right word (*) to be a benefit to them, which correlates with the research. Cruice et al (2010) explained that PWA felt not being able to find the right word was what impacted a great deal on their communication. The fact the participants found the app useful for that reinforces is functionality.

The SANTA app gave participants the freedom to practice what they wanted. They could add pictures or words they want to use. Mortley et al (2003) described therapy that could end up being demeaning and inappropriate. The SANTA app is the opposition. It promotes user involvement. Two participants said they liked the categories (*) on the app. It allowed them to choose what they wanted to work on.

Renvall et al (2013) made it clear that an effort should be made to target personally relevant and functional words in treatment. A person’s interests vary and stretch over many domains. By enabling them to self-select items of their choice they were individualising the programme like in traditional speech and language therapy in order for it to be effective (Moller Pedersen et al 2001).

The SANTA app allowed participants to choose things they were concerned about and interested in, and they found the experience of using it more rewarding because of that. A prime example was BA. Using the category of the ‘seaside’ (*) on the app stimulated her because this was a hobby.
One participant found the need to spell a word to add it impacted on her ability to use the app independently as she explained it would take her a while to type out a word.

Participants were unanimous that the SANTA app should be recommended to people after a stroke.

“I’d recommend it 150% for anybody that’s had a stroke. I’ve had 2 strokes and that’ll give you an idea and I’d recommend it,” (CM).

One participant and carer spoke about introducing the app sooner to people who have suffered a stroke. They felt it would benefit the person more. This was an important finding, one that needed to be considered seriously.

From analysing and reporting the findings from this research project, the conclusion is that the SANTA app has huge potential for PWA. It can offer them a new form of therapy and a better service delivery option. We know from this study that the participants want to keep improving and learning. The app has the potential to help them achieve such goals.

There are some limitations within the study one in particular is the small sample size. Given the feedback from the PWA it was clear they had a lot of opinions and suggestions for the app and therefore including a larger group may have offered more. A future recommendation would benefit from a larger sample size. The length of time the participants had using the app was short. They may have benefited from more time and support. The software used was another limitation to the app which led to some dissatisfaction.
6. Conclusion

The general attitude towards the app was positive. Feedback from the users included the need for a delete button and support while using it, be it to motivate them to keep practicing or adding pictures. These valuable and practical suggestions can help refine the app. PWA wanted to keep learning. They viewed the app as a positive aid. One woman suggested it made her feel more “positive”. The strong response from the participant’s demands further research of the app, bearing in mind the changes suggested. A larger sample size could be used. From the research we find PWA are always looking for new ways of improving their life. It is important to keep on evaluating and developing different techniques to progress the communication skills of PWA. This is a sensitive area and affects the person who has suffered the stroke and their families in many different ways. The SANTA app has the potential to be effective given the response from the participants.

One participant liked the pictures to reminisce. This area could be further developed as part of reminiscence therapy.
Reference List


## Appendix A

**Department of Clinical Therapies, University of Limerick**

**Consent Form**

<table>
<thead>
<tr>
<th>Statement</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>I read the information leaflet</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I had an opportunity to ask questions</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I was satisfied with the answers to my questions</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I understand what is involved</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I understand that information is kept safe and private</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I know I can stop at any time</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I agree to being video-recorded</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I consent to the researchers seeing my medical records</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
<tr>
<td>I consent to my app data being tracked</td>
<td>![Thumbs Up]</td>
<td>![Thumbs Down]</td>
</tr>
</tbody>
</table>
I agree to participate in this study.
Name: __________________________ Name Researcher: ________________________________
Signature: ______________________ Signature Researcher: ____________________________
Date: ___________________________
Appendix B
Questions:

Band A:

1. Tell me about the app?
2. How did you get on with SANTA/ the app?

Band B: Usability

1. How often did you use the app?
2. When did you use the app?
3. Tell me why you used it at this particular time?
4. How long and often did you use the app?
5. With who did you use the app with?
6. What was the easiest thing about using the app?
7. What was the hardest thing about using the app?
8. Did you use all the pictures or just one particular category?

Band C:

1. Has it made a difference to you
2. Has it made a difference to your communication
3. Has it made a difference to your naming
4. Can you give me any examples of where the app was has been useful

Do you think it would work for people with aphasia? How

Who do you think would like the app?

Why didn’t it work for you?

Do you want to keep the app?

Carer question:

Is there anything you could or want to add to this experience?
Appendix C

These ramps comprised of a number of different pictures that portrayed a particular answer to the questions being asked. The ramps here have been modified to a smaller version. During the interviews they were much bigger for the participants. When implementing the ramps, the interviewer would ask the question and give the options reading each one aloud and pointing to the option at the same time.

Questions:

Band A:

3. Tell me about the app?

![GOOD](image1)

![BAD](image2)

Neither like it nor dislike it

4. How did you get on with SANTA/ the app?

![USEFUL](image3)

![FRUSTRATING](image4)

Useful Tips
Band B: Usability

9. How often did you use the app?
MONTHLY

RATING SCALES
(e.g. once, twice a day/week/month)

How long did you use the app?

Couple of minutes
10. When did you use the app?

MORNING

AFTERNOON

EVENING

NIGHT
11. Tell me why you used it at this particular time?

Someone there to help me

Alert

Routine

Spare time

12. With who did you use the app?

BY YOURSELF

With Someone
13. With who?

- Grandchildren
- Daughter
- Son
- Wife/Friend
- Husband

14. What was the easiest thing about using the app?

- Adding Pictures
- Tapping/Scrolling
- The Sound
- Using Categories

15. What was the hardest thing about using the app?
16. Did you use all the pictures or just one particular category?

- All Pictures
- All Categories
- Just one Category
- Some Categories

(Probe Why)

17. Which category and why (show me)

- Useful
- Hobby
- Interesting
- Practice
- Event

Band C:

5. Has it made a difference to you? How?

- YES
- NO
6. Has it made a difference to your communication?

**Yes**

Finding Words

**No**

Better Conversation

7. Has it made a difference to your naming?

**Yes**

**No**
8. Can you give me any examples of where the app was has been useful?

<table>
<thead>
<tr>
<th>Particular Word(s)</th>
<th>Particular situation</th>
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</thead>
<tbody>
<tr>
<td>SHOPPING</td>
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<td>SOCIALISING</td>
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<tr>
<td>PHONECALLS</td>
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</table>

<table>
<thead>
<tr>
<th>Particular person(s)</th>
<th>Particular event(s)</th>
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</table>

Topics

WORDS
Do you think it would work for people with aphasia (stroke)?

Yes  No

How?
With Practice  Finding words

Seeing Picture  Hearing word

Who do you think would like the app?

People after a stroke

Everyone  Good with Technology

Young people  Older People

Why didn’t it work for you?

CONFUSING
Would you want to keep the app if you could?

Yes

No

If Yes… Ask client do you want Sue to visit you and link in with you in a couple of months?

Carer question:

Is there anything you could or want to add to this experience?
Appendix D

Script

“Today (participant’s name), we want to find out what you think about this app (point to app on the phone) and how you got on with it - since you were one of the first people to test it out. We want your feedback because this will help us to make any improvements to the app for the future – so be honest: both the good and the bad! Remember, when I say “app” I’m talking about this program on your phone/tablet (point to app). (Colleague’s name) here will be taking some notes and recording us so that we don’t forget your answers. Ok let’s begin.”
Appendix E

Statements from interviews:

Spontaneous response

Statements from Interview with CM

Band A

Q: If you could tell me about the app in your own words?
It’s like a small little computer... it’s fantastic.... it shows you pictures...it helps my memory and that’s the thing I liked the most about it.

Q: How did you get on with the app?... In terms of using it?
I’ve been doing that for the last 3 months with RA, she’s lovely and she was very good...I’d say she would be very proud of me today … she would be thrilled because I didn’t know one thing. If she came to me last week and she asked me the questions, ... and if she asked me the same questions the following week I wouldn’t have a clue what she was talking about, I feel I did it and I feel I’m delighted I did so well with the questions.

Q: Your saying there that you are not normally good with electronics’ like that, but did it take you a while to get used to it at the start?
A: I hadn’t a clue what I was doing but B would show me how to turn it on and things like that, but that was fine.

Q: And were you able then CM to add the categories and words yourself or did someone help?
A: No, she (RA) nearly did it with me all the time and there was nearly always a category that she made me study…I thought I did very well because if you asked me 6… 3 months ago what she was doing ... I wouldn’t have a clue.. so I’ve come a long way.

Q: If you could think of a word to describe how you got on with it? Is there anything that comes to mind?
A: Very satisfactory is the word I’d use!

Q: And if you were to rate it from one to ten, ten being the highest how would you feel about the app itself?
A: Eh I don’t know enough about electrical things probably.

Q: Just from your own use?
A: From my own experience, I’m very happy I’d say definitely 8 out of 10.

Band B: Usability

Q: Just a bit now on usability, how often did you use the app Mary?
A: I wouldn’t have used it that much … I haven’t seen RA since before Christmas ... so I’ve remembered all those things and I’m thrilled because I didn’t study any of them.

Q: So before that would you have used it daily or weekly?
A: … If B hadn’t come in today then tomorrow.

Q: So every second day then?
A: Ya, I would.

Q: And how long then would you use it for?
A: Oh at least an hour.

Q: Okay so every second day for at least an hour.
A: Oh god ya, I would ya.
Q: And was there a particular time of the day that you found yourself using it?
A: No, sometimes if I sit down and play my bridge ... then I’d put it away and I’d start on that. I’d always do it during the day, I wouldn’t be tired you see.
Q: Would you have done it in the morning at all or was it mostly afternoons?
A: ...I’m nearly always gone in the mornings ... probably Midday would be best to describe it.
Q: Midday or some evenings?
A: Ya, early evening.
Q: And that was just more your routine?
A: Yeah exactly.
Q: In terms of visibility you just mentioned your eyesight?
A: My eyesight isn’t great.
Q: So how did you find that then using the app?
A: No problem.
Q: Who did you use the app with?
A: Mainly RA and if RA wasn’t there then B (grandson).
Q: And was there any time you used it by yourself?
A: No, B would come to me always after school.
Q: Could you tell me what was the easiest thing you found about using the app?
A: The easiest thing I found was being able to remember the names of things that were shown on the app.
Q: So if we just opened it there and if you were to look at the app now and you thought what was the easy? In terms of using it?
A: Pres...sing the button on the top, it was dead simple after that you’ve to think of nothing and once I knew SANTA was the word I knew just to press the left hand corner and that was it.
Q: What was the hardest thing? Anything stuck in your mind?
A: Nothing, I can’t give out about it in so far as at the moment its simple ... and I’m not finding it hard at all.
Q: And was there anything that didn’t work with it or that you thought could have been better?
A: No, I couldn’t fault it really ... it’s just so simple, you press the button ... the entry thing there (pointing to it) and it’s ready.
Q: You said B helped you add a category, but were you able to add them yourself?
A: We were ya.
Q: Could you do it on your own?
A: I could but... since I got my second stroke ... I can really mix up words and I can really forget spelling.
Q: Yes, so searching for the word is difficult?
A: Yes searching for the word ... I have to look at everything, but I think maybe ... my sight isn’t helping.
Q: Did you use all the pictures or just one particular category?
A: No all, those ones that were there, there all new ones every single one of them, one two three four, there’s about six or seven of them I used.
Q: And was there one in particular that you used more than the others?
A: No, I did the cookery first and... then every week they gave me one... and then she’d go back over them and say do the whole lot of them again and I could remember them no problem but I think my sight and my memory are my two biggest problems.

Q: Okay, no problem and even when you go in like this how did you find moving it?
A: I didn’t find that any problem at all.

Band C:
Q: Would you say it has made a difference to you?
A: Shur I’d never have known if I was good or bad at those things if I hadn’t got the...app.

Q: But do you feel it’s made a difference to you?
A: Oh god I do, I can remember! I showed you those... 7 or 8 different categories... I had never looked at those since Christmas... I’m thrilled with myself that I could remember those things... and I wasn’t bad at them sure I wasn’t?... so that’s great.

Q: Would you say it’s made a difference to your communication?
A: ... I feel my communication is very good, over the last 3 months I’ve gotten way stronger, 6 months ago I was very poor but I feel I’m way stronger now..... I stood up last night at bridge and opposite my 40 members I was able to make a speech and I didn’t think I could do it... and I stood up and I was able to tell them and I didn’t stop and I kept going!

Q: Do you think the app has helped with that?
A: It has made me more positive...

Q: Would you say it’s made a difference to your naming? Naming items?
A: Oh god it has... I was very poor, say 12 months ago I knew nothing.

Q: So it’s come a long way since the app?
A: Ohh yep!

Q: Is there any example you could think of where it’s been particularly useful to you? Particular situations? Anywhere stand out?
A: I think... it has helped my memory... so much, as I said to you if you had taken me in 12 months ago and showed me all this, you would have said to me my god she’s a disaster... and then to look at me today, I’m chuffed with myself you know, I think I was very good.

I suppose your example you just said at the bridge club?
Yes, K said to me “stand up there and talk”... and I said to them all “you know now I’m not 100%” but they were all behind me all the time... they were thrilled I could do it... and I made no mistakes and I was happy out. I’m really delighted that we did this today because I didn’t realise that I would remember... and shur I was able to keep going, so I was delighted with myself.

Q: Who else do you think it would be suitable for?
A: ... I’d recommend it 150% for anybody that’s had a stroke. I’ve had 2 strokes and that’ll give you an idea and I’d recommend it.

Q: If you could pick someone, who do you think would like the app?
A: Well my friend... got a bad stroke..... and has lost the use of her left hand and leg and... I’d love to see her use it. But I think anyone that’s had sickness or a stroke or anything like that... I’d recommend it.
Q: Is there anything you can think of as to why it didn’t work for you or something you would improve with the app?
A: ... I think my biggest problem is spelling, it would take me ages to spell words into the box.
Q: So you would like something to spell the word for you?
A: Ohh I’d love it.
Q: If you could, do you want to keep the app?
Oh god ya I’d love it! But why wouldn’t I? ... because if I don’t and I don’t keep using the app I won’t be able to keep doing little things that I want to do ... I think I’ve all the time to keep learning and I think the only way I can do that is by the app (ya).
Ramped response
CV

Band A: CV used ramps throughout by pointing to the pictures.

5. Tell me about the app?
   Interesting

6. How did you get on with SANTA/ the app? useful was it frustrating was it
easy was it difficult
   Easy
   Rate the app? Used a rating scale
   7/10

Band B: Usability

7. How often did you use the app? Was it daily Or weekly Or monthly
   Weekly
   How many times a week did you use it?
   6 times a week

8. When did you use the app? the morning the afternoon the evening at
   night?
   In the evening

9. why would you use it maybe in the evening, Was there someone there to
   help you or were ya alert, was it part of your routine or in your spare time
   in your spare time

10. How long did you use the app? A couple of minutes Maybe a half an hour
    Or an hour
    A couple of minutes

11. How many minutes? Used rating scale
    7 minutes

12. Did you use it by yourself or with somebody
    With somebody with somebody agreed with a mmm

13. Did you use it with your wife?
    yes

14. What was the easiest thing about using the app Was it adding the pictures,
tapping/the scrolling, the sounds or using the categories.
   (took piece of paper to examine more)
   using the categories
   so is that what you found easy? Yes

15. Which categories did you use the most? (got the app and opened up the
categories for him to show us)
    The music

16. Why did you use the music So did you use music because it was fun, or
    interesting, or you liked the pictures
    interesting

17. What was the hardest thing about using the app was it adding the pictures,
the tapping/the scrolling or the sound
The sounds

18. Did you use all the pictures or just one particular category or some categories?

Some (spontaneous)

19. Has it made a difference to you yes or no:

Pointed to yes

20. Has it made a difference to you

Mmm

21. How? How has it made a difference has it made a difference with practice or finding words or seeing the picture or hearing the word

Finding the word

22. Has it made a difference to your communication?

Yes

23. So do you think this app would be good for people who have had a stroke yes or no

Yes (spontaneously)

24. And who do you think would like the app would everybody like it or people who are good with technology young people or old people

Everybody

25. Has it made a difference to your naming? Yes or No

Yes (spontaneously)

26. Can you give an example of where the app has been useful like word in a situation or with a person or for an event

For an event

27. Why do you think the app didn’t work for you was it confusing was it boring annoying no delete button too slow too fast

Too slow

28. If you could would you want to keep the app yes or no

Yes (spontaneously)
Appendix F
Spontaneous responses:

Colour codes: PM  NA  MJ  CM  BA

Reactions to the app:

Comments:
All want to keep app
it took me a good while to get used to things really... at the beginning when I when I got the stroke first I was I could say things at all... I just couldn’t and then gradually over time you get it you learn over time
I think anybody who has had a stroke first... could learn from that really... I think the sooner the better in one sense... it helps again anything... that would help you to learn... especially at the beginning..... it’s very important really
I would yes- keep it
That’s helpful I think it’s very helpful
No... It was easy enough. Some things I enjoyed.... More times I didn’t enjoy it as much as I used to. ....
No no I don’t need it? ‘Cause I have it here.
Would I ever use it - Oh no I’d need it then
Oh god ya I’d love it! But why wouldn’t I? ... because if I don’t and I don’t keep using the app I won’t be able to keep doing little things that I want to do ... I think I’ve all the time to keep learning and I think the only way I can do that is by the app (ya).
It’s like a small little computer... it’s fantastic.... it shows you pictures...
Very satisfactory is the word I’d use
it’s fantastic...
we did this today because I didn’t realise that I would remember ... and shur I was able to keep going, so I was delighted with myself.
It has made me more positive ...
you can have you know you can have eh fun with them you know and
Ok
Various bits and pieces I’ve learnt...from the music it’s made me understand better...
how the music is protected
the words helped me yes they did
I found it difficult at first, frustrating ... but then it was a case of as people explained it, showing me various areas ... getting used to using the words, it got easier.

Technology
Again it’s a technology thing.
No not the technology of it
I know what it is but how to actually use it is another thing.
if you’re using it you’ve got to have the knowledge of how to use it. +
Eh I don’t know enough about electrical things probably.
No sure... I never had this til so and so showed me to do it.
the iPad have you ever used this before? Before your..Oh I have ... I have I used it before...

Ipad: Oh I did...I was good at it like, you know I was... always doing places with it
So you like technology? Yeah I like that... But this thing, like I know this I can understand this...
It took me a while
The app am it just took me awhile to get used to it...I wouldn’t be used to...those.. gadgets.. I’m not used to mobiles and all that stuff
no I wouldn’t be... I have a mobile alright but I I you know I just use it just to send message or you know here you know if somebody rings me or that’s about it really...
I just use it I’m not one that uses continuously
at beginning took awhile to get used to it
I could understand the voice okay
Oh I could understand the voice okay
Any changes you would make to the app? No
I think the fact that you could see a picture.... use the person that was speaking really... sorry the voice yes..... I think that that helped
I can’t say there’s anything that was difficult... once I knew the sequence of using it It was ok
I find it easy
Pressing the button on the top, it was dead simple after that you’ve to think of nothing and once I knew SANTA was the word I knew just to press the left hand corner and that was it.... Ya ... you saw SANTA.
I didn’t find that any problem at all.
No, I couldn’t fault it really ... it’s just so simple, you press the button ... the entry thing there (pointing to it) and it’s ready
Nothing, I can’t give out about it in so far as at the moment it’s simple ... and I’m not finding it hard at all.
I kept making a mistake again and again on those ones really nothing else that I can think about really... other than I just couldn’t change once I made a mistake.... I couldn’t change the mistake that’s the main thing really.
Some things I picked up quick because I’m used to it really maybe but other words other things I wouldn’t
Except ones you know what I mean I made a mistake on
they picture that I picked that I selected wasn’t do you know it wasn’t... When I came back to it again I kept making a mistake about it.. because it wasn’t one was I would ass associate with it
because you could pick anything on the google... anything can come up and you know its just am sometimes you can pick the wrong ones
what I mean did a mistake on it because...the parts am the categories weren’t correct
I couldn’t delete it... I couldn’t stop it and change it
Because maybe they weren’t American ones or whatever I say this is not connected to am this subject
It was ok it was correct really except now and then a few times I didn’t they picture that I picked that I selected wasn’t do you know it wasn’t...
It did yes.... But even still after that I still made a mistake afterwards.
To get the voice to match the picture
Don’t know what was easy about app
To get the voice in the correct way of using it, I found that difficult.... Too slow.

Scrolling

Unexpected Outcome
Just an old memory, my old memory.
it helps my memory and that’s the thing I liked the most about it.

**Using the App:**

**Why use the app?**

if you could add people onto it and people’s names to write them in...So if you could 
+it’s when I’m talkin’. I talk to a lot of people but ...when people are out and we’re 
talking they’re saying the words... the names. And maybe I’d talk about, say for 
instance “do you know ... such a one” or “such a person” and they’d say the word... 
The names you see, but I wouldn’t be able to say the name... But I’d know it then .. 
immediately.. the name is mentioned and I’d know it then so we’re talking away... 
do something like that now ‘twould be... (gestures thumbs up) 
And I could be able to use maybe them names again ... because when I’m talking 
with people... I want to write down people...
Maybe somebody you’d know or maybe someone I used t’ know and that was their 
name and if I was writing something down...
Well they’re all useful like if I can - if I know, eh, Tommy Brennan say, I could say the 
name Tommy Brennan. 
Oh yeah, at times like you know. Sometimes as.. what was the name., tell me the 
name of the,... anything there.. 
People ...and the names... if I could write their names ... I’d like that. 
But if I had the name yeah, if I had the name. 
Well, generally you see, if I’m talking to someone...that’s a problem...‘cause generally 
what happens is ... they’re talking about someone... And I might say well “you know 
such a one...?” I’d say like that “What’s this his name is?” and they tell the name ... 
Someone else would say it. 
Oh if I knew ... if you wrote down all the names of people... and I could use that “I’d 
write down Tommy Brennan there and, I could ramble away then maybe about 
Tommy Brennan. 
But... names are the thing that I’m ssssstuck on. If I got ... this with names like that 
then I’d put Johnny or Mikey or whatever the name down there. 
That’d be great wouldn’t it? 
Say it out but I can’t say it out. I’m not able, I’m not able to talk. I want the name. 
Well in conversation you see they’d have it where I wouldn’t have it.. the name. You 
see there’s a lot of people and things locally around here you see and I just can’t get 
the name right. 
Yeah And supposing you tell me about the name, I remember, I know it then but to 
get that name like I don’t know that name. ...I know the people but I don’t know the 
name....that’s the thing ... it’s... ...frustrating). 
You see what I’m talking., I want to talk about people. I want to write about people. 
...I’m talking about someone I can’t get the name ...and ...I’d like to get the name... 
....I know the people I want to say but I can’t say the name. 
No well it’s important... to be able to say something and know exactly what I’m 
saying.. 
the voice helps when you need it? Oh it does, yeah.
If I could get names like that, a lot of names, names would be great. Like you know, I
could want such a name, “Oh jeez I know his name? I want his name and I want to
talk to him”.
So you’re able to read single words and that? You’re able if the name was written
there ....Oh I am yeah, if you tell me the name of someone I know. Now you can’t tell
me a name you see I don’t know what his name is.
But you see it’s just names, hold it let us see now, hold a second to see now...
So if you had your friend or neighbour, like this, you’re saying with the name on it, it
would help.... Oh yeah if their names were in that you know?
But, but someone said look will you write that thing, I could write it in you see.
more useful for you if you have pictures of people on there- It is, but if I knew who
they were and the name on them. I could talk... I could ramble away then you see.
... This is the thing, say these are some things that... we might not be using ever again
you know. I might have a car - a new car. I don’t have to buy or talk about a car again
anymore ... You don’t need to talk about it anymore.

**Support:**
I was you know RA was telling you know....she would say you know this and
sometimes.. I wouldn’t she’d have to use it again...she went a few did certain
number of ones and then we added to it you know
I couldn’t think of all you know first in different ones and then gradually she... added
more to it really or she helped me to add to it
Like asking what do you what are you interested about this and what about this...
Cuz really that’s part of the thing I can’t remember things
because I forget about things I can’t remember things
I use it you know that during the week that that person came... I went through a few
times you know am during that week....but after Christmas you know Christmas to be
honest with you I just forgot about it to be honest... she used to come every week
it did for awhile.... maybe I didn’t try enough
Just myself
I would want support a bit
No, she (RA) nearly did it with me all the time and there was nearly always a
category that she made me study...I thought I did very well because if you asked me
6... 3 months ago what she was doing ... I wouldn’t have a clue.. so I’ve come a long
way.
If B hadn’t come in today then tomorrow.
Mainly RA and if RA wasn’t there then B (grandson).
No, B would come to me always after school.
I hadn’t a clue what I was doing but B would show me how to turn it on and things
like that, but that was fine.
Very little... not much. I stayed on my own like you know and I’d be concentrating...
Mostly by myself.
I’d be concentrating on what’s id be doing
...Ohh yeah, RA was there ... she was always asking me questions.
RA would the only one like...
RA, okay. So she probably added those for you did she? Yeah probably, someone like
that.
Oh RA, probably, could be RA, yeah. Oh yes they did that.
‘cause you’ve new pictures here- They did that yeah
Would it say the word for you? - It’ll tell me then yeah ...I understand that.
if you didn’t get it then you’d press the button. Yes
Well I didn’t get enough people to give me a hand using it
Yes! It took a good couple of days but trying to get it across to other people took longer
Then trying to get the time for the girls to come and do it, that’s another thing.
But as I said the idea is to link in with somebody at the time.... It would have been a help to me
they couldn’t always get the time to do it.
Always one of the carers at their time to come in
She gave me a hand on occasions but then that when she’s available granddaughter
No mainly the girl here
some of the girls came around alright ... I said I’ve got this here show me the best way to use it.
Yes that hasn’t been practical yet? asking the staff

**Patterns of use:**
it does it tells you whether your right...it’s a way of am of finding out am finding out what was right or wrong
I actually never took it with me when I went shopping so it wasn’t a case that “oh, that’s a word I remembered!”. No stand out moments,
...It would come easy to me. I’d ask the question again.., and I’d have to say ... what
the name of that was... before I’d do it myself.
No I’d leave it ‘til I talk myself and if not, I’d question it.
then in the afternoon after a sleep and that I would be much better to be honest with you... Even though I waken up early in the morning
usually at night am the evening shall we say
well generally speaking in the afternoon I go asleep because I tired.. I was doing that since had my stroke... I’d feel much better after nap
I would actually to be honest with you often in the morning.. I waken up early and then I get tired... after awhile and then if I get fall asleep for awhile.. I be ok do know what I mean I feel refreshed really
did definitely anything like that would....would of helped really...so long as I I wasn’t tired...if I’m tired I can’t dya know I’m not great
probably Midday would be best to describe it.
No, sometimes if I sit down and play my bridge ... then I’d put it away and I’d start on that. I’d always do it during the day, I wouldn’t be tired you see.
Mornings for handiest sake. – someone to help
The mornin’.... maybe the evening? I’d be bits of times, sometimes, bits and pieces
Morning and evening.. maybe
I wouldn’t have used it that much ... I haven’t seen RA since before Christmas ... so
I’ve remembered all those things and I’m thrilled because I didn’t study any of them.
every second day- Ya I would
Oh at least an hour
I don’t stay that long at it.
Well I would say half an hour
Yeah...with myself.
I didn’t practice it much but I learned a lot of it and I knew pieces of it. But sometimes I mightn’t remember... It’s remembering ... a word... I might be slow on it sometimes. And after...immediately then...it’d (the app) tell me and I’d remember, I’d think of it. I don’t use it often. 
less than once a week- Yeah, it could happen. 
When RA used to come to visit- Yeah...she was doin’ something... she was doin’ a bit. 
Would she help put on new pictures- Well they would, they’d help me like that with anything...Yeah. Ah she would 
Well it’d be half an hour anyway or maybe an hour sometimes. I’d just take it up for a few pages (minutes). 
when you were feeling more awake and alert? -Ah.. I suppose when... about three times a week 
I may go through once no bout twice 
Because really I kept going until I finished and then I start again 
I went through everything...I saw it as a thing to do because you know when I was using it I thought well I should I thought it was part of the whole am unit... rather than the stopping rather than and leaving it I kept through it 
I go to the seaside 
Everyday 
I do all categories 
I more than myself you know 
No, I did the cookery first and ... then every week they gave me one ... and then she’d go back over them and say do the whole lot of them again and I could remember them no problem 
Ok so every second day you use it? O god ya I would
Not long ... not often enough... Daily... because I had to try and get the girls to come down and explain things and then that took time. 
I’d try and have to do that myself each time. 
Well ...not often in the way to use it and they couldn’t always get the time to do it. Well if I did it myself, daily. 
15 minutes/half an hour and then trying to get it across ... and me thinking about it each time takes longer again. 
Time get shorter as you got more familiar with it- No, not really. 
One particular category each time
No I used them all just to get the best way of doing it

Significance to Aphasia

Barriers:
I think my biggest problem is spelling, it would take me ages to spell words into the box.
Q: So you would like something to spell the word for you? A: Ohh I’d love it.
Q: In terms of visibility you just mentioned your eyesight? A: My eyesight isn’t great.
Q: So how did you find that then using the app?A: No problem.
Q: Yes, so searching for the word is difficult? A: Yes searching for the word ... I have to look at everything, but I think maybe ... my sight isn’t helping. but I think my sight and my memory are my two biggest problems I could but... since I got my second stroke ... I can really mix up words and I can really forget spelling.

No No I’d have to get it sure...Well naturally I wouldn’t be able to read. Too slow, the explaining side of it. Getting it across about certain things to other people, annoying, trying to explain it The idea of explaining how to use it Each person has a different has a different idea of how to use it... I would know how to do it but trying to explain the same thing to someone else takes a going Change- trying to explain to other people ... trying to get in their mind how to change it was like hitting a brick wall it did trying to get it done then – because the girls would be here but they’ve got their own times to do things and work and trying to get them I’d try and have to do that myself each time.

Benefits:
But... sometimes I mightn’t remember... It’s remembering ... a word... I might be slow on it sometimes. And after...immediately then...it’d (the app) tell me and I’d remember, I’d think of it. Oh I did. ...something that I wanted to say and I couldn’t say it and then when ... it told me, I was able to know. So it was something that helped you with words that you were not able to get? Yeah! Yeah oh it’s a great difference. Because I wouldn’t be able to talk otherwise I got used to it really in a sense...after awhile I I got used to it very much...After a while yes I can remember the things well it does really in a sense that anything that would help you to learn things using subject that were I knew.. rather than ones I’m not used to at all... ones that I can use that I would be interested in generally so long as the word they weren’t am ones that you weren’t use some subjects would be kinda of I wouldn’t know. I learned from the ah the pictures....followed if you listened to it I got it You see again you listening to... pictures and... then you join it up to a words really and that’s helps really... especially if you... using usual things you know words that you are am words that are that use each way each day its like anybody you know if I was saying something and am somebody else says what it is it helps me to remember what it is or what the word is.... I might know what it is but I want I may not be able to say it it has definitely... because again once you know you can pick up what was one it really and it helps you to learn it after a while and especially hearing the person saying it ... you learn what and once you say it again you can learn it really I did like the fact that it was you know I was going through it and I could generally speaking know what was coming you know really Oh god it has ... I was very poor, say 12 months ago I knew nothing. ... I feel my communication is very good, over the last 3 months I’ve gotten way stronger, 6 months ago I was very poor but I feel I’m way stronger now..... I stood up
last night at bridge and opposite my 40 members I was able to make a speech and I didn’t think I could do it … and I stood up and I was able to tell them and I didn’t stop and I kept going!
Shur I’d never have known if I was good or bad at those things if I hadn’t got the…app
Oh god I do, I can remember! I showed you those … 7 or 8 different categories … I had never looked at those since Christmas … I’m thrilled with myself that I could remember those things … and I wasn’t bad at them sure I wasn’t? … so that’s great.
I think … it has helped my memory … so much, as I said to you if you had taken me in 12 months ago and showed me all this, you would have said to me my god she’s a disaster … and then to look at me today, I’m chuffed with myself you know, I think I was very good.
Yes, K said to me “stand up there and talk” … and I said to them all “you know now I’m not 100%” but they were all behind me all the time…. they were thrilled I could do it … and I made no mistakes and I was happy out. I’m really delighted that we did this today because I didn’t realise that I would remember … and shur I was able to keep going, so I was delighted with myself.
Oh god I do, I can remember! I showed you those … 7 or 8 different categories … I had never looked at those since Christmas … I’m thrilled with myself that I could remember those things … and I wasn’t bad at them sure I wasn’t? … so that’s great.
The easiest thing I found was being able to remember the names of things that were shown on the app
When I’ve been using it, as I should be using it, yes it has made a difference + (easy) On the odd times I’ve actually used it, if one of the girls gave me a hand it’s made it a lot easier.
The words come easier for me, the pronunciation of type of word.
Well the words coming out became a lot easier to use.
More practice than saying because when you see the word it was easier to find the pronunciation
*Found it helped with music and words? Oh yes definitely*
No its help me all through
I can speak more you know
Ya very much difference
**Client recommendations for users:**
Yes it would actually –help pp with a stroke
O no id no problem when it came to food and music on the thing id no problem I could use it alright.
It could help with assistance
Having never had a stroke I wouldn’t be able to verify that sort of thing but I can understand the possibility of that happening.
If there was someone here that had a word missing somewhere along the line I could say o yes this could help them with that.
*it helps you to do that really
one of the problems is that I can’t while I know I say I i know what word is I cant always stay it say it clearly…. And I stutter and I say I could I just can’t get it
I think the sooner the better in one sense..it helps again anything anything that would help you to learn…especially at the beginning….. it’s very important really
I think especially if you have a stroke... and you can’t remember things at the beginning dya know it’s good to... remember things.
Everybody I’d say I think anything that would help you help a person to... go through things again and learn things really it would it would help
Well my friend ... got a bad stroke..... and has lost the use of her left hand and leg and ... I’d love to see her use it. But I think anyone that’s had sickness or a stroke or anything like that... I’d recommend it.
... I’d recommend it 150% for anybody that’s had a stroke. I’ve had 2 strokes and that’ll give you an idea and I’d recommend it.

Oh I’d say yeah... definitely.

Oh definitely, you see... yes certainly, ‘twould help everyone. ...Naturally, if you were talking or trying to talk to someone... your speech is gonna be affected like that.... But, I’m not too bad, I’m improved, fairly good.

The very same way as I’m doing, as I’m saying - the same thing. They have to be able to talk the same as I’m trying to talk. And especially what you’re trying to talk... you’re not able to say - I’m able to try to say, sometimes I manage ... the only thing I miss is the name...
Ramped responses:
Colour codes: BA  CV  NA

Reactions to App
Comments:
Interesting
You would ya I would keep the app
Interesting
Interesting – pictures
Keep yes
7/10
Oh it’s not boring, definitely not boring,
Too slow.
No, indifferent.
Technology:
it took long to get used to it
use to technology
Categories
Adding the pictures
Found speaker grand
Using categories
Scrolling ya.
Adding the pictures, I’d say
Getting the sound right. (ok).
The volume.
Oh I could understand the voice okay.
Too slow +
Too slow – make faster +
Delete button – o it would ya +

Using the app
Support:
With somebody – wife and grand children
Patterns of use:
Twice a day
A lot of (categories)
One hour
Yes a routine – alert
I use it am afternoon time
She would say the word first and then check if she was right
6 times a week
Couple of minutes
Some pictures
Music
Weekly
In the evening
In spare time
Significance to Aphasia

Benefits:
Does ya difference to communication
Find the right word
Difference to communication yes
Difference to him yes
Finding the right word
Difference to naming yes
For an event

Client Recommendations for users:
Everybody
Yes- for people with a stroke
Everybody both young and old
It would ya it would – people with stroke
Well young people with the technology we have now, including myself but everyone that not only had a stroke but has a problem with words,
There’s a lot of people here that have that problem.