

Research Update

Issue 6, January 2024



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How does the brain listen to speech after a stroke?



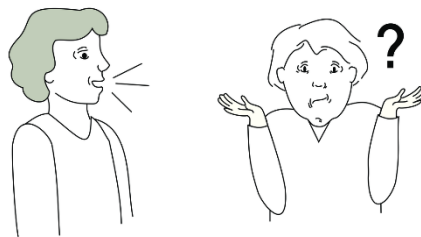
Holly
Robson



Emily
Upton

What is the project about?

Understanding speech is crucial for our communication, but often people with **aphasia** have **difficulties** understanding speech.



How the **brain analyses speech** is **complex**, and lots of **different brain mechanisms** help us to listen to and understand the people around us.

We want to know how the **location of a stroke** impacts a person's **ability to analyse speech**.

This will tell us more about **what the brain is doing** to try to understand speech and may help us **identify a new brain mechanism** to treat in therapy.

What does the project involve?

We are recruiting **people who have had a stroke** and now have **difficulties understanding speech**.

We are using **online testing (Zoom)** to complete assessments of language (understanding speaking, reading and writing) and thinking.



We are also completing an **EEG** assessment to measure **brain waves** while people listen to speech.

Participants wear a **cap** in which **electrodes** are attached. They then **listen to stories** and have to **choose the pictures** which **match what they hear**.



Next steps...

We are just over **halfway through** data collection and should be **finished early this year**.

Once we have analysed the data, we hope we can find ways to **help the brain** listen to and **analyse speech**.

This may involve:

- **changing the way** in which **speech is presented** in therapy.
- using **neurostimulation** to **boost the brain regions** involved in understanding speech.



Sentence therapy for aphasia (again!)



Claudia
Bruns



Kerry
Dathan

What is "UTILISE"?

When communicating with others, we **listen** to and **speak** in **sentences**. Many people find **sentences hard to understand** or **say** after a stroke.

We made a **therapy** called **UTILISE**. It starts by working on **short sentences**, like "I made it". UTILISE has **3 tasks**:



Listen:
Same or different?



Listen:
Be quick!



Speak:
Say sentences.

What have we done so far?

1

In the **UTILISE-1** project, we tested UTILISE therapy given **in-person** at **UCL**.

2

Then we created an **iPad app** for use at home.

3

Next we ran a **small study** with 4 people using the **therapy app** at home. This showed that it is **possible** and **safe** to do the **UTILISE-2** research project.



Thank you to everyone who took part in these research studies!

What are we doing now?

Now we have started the **UTILISE-2** research project.



WE ARE RECRUITING!

What does UTILISE-2 involve?

You will visit **UCL Chandler House** to meet a researcher, **twice before therapy** and **twice after therapy**. This takes place across a **few months**.

In the middle, we will **lend you an iPad**. You will work on the **therapy app** in your own time **at home**.



You will work on the same **3 tasks** of **listening** and **speaking**, starting with **short sentences**.

You can **ask for help** while using the app. We will help you via **phone** or **video call**.

After therapy, we will ask you **what you think** of the **UTILISE** therapy app.

Who is this project for?

People who have **aphasia** following a **stroke** that happened **at least 4 months ago** who...

- are at least **18 years old**
- use **English** regularly at home
- have **difficulties understanding sentences** and **speaking**
- have **not already taken part** in the previous UTILISE projects

Interested? Contact:

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Do videos with same language subtitles help people with aphasia understand language better?



Ajda
Kriselj



Sally
Spurring

Why is this important?

Auditory comprehension difficulties in people with aphasia are common and debilitating. They can lead to communication breakdown and social isolation.

There are not enough therapies to support these difficulties.

Same language subtitles offer two ways of delivering the same information simultaneously. They have been shown to have benefits for language comprehension in other contexts e.g. learning new languages.

If subtitles can support people with aphasia to understand language, they could provide a valuable new therapy tool.

What people did - study #1

An aphasia-friendly survey was distributed via the UCL clinic and three aphasia charities.

The aim was to find out if people with aphasia were using same language subtitles independently. If they were, what were the benefits?

61 people with aphasia replied.

What we found

People with aphasia with auditory comprehension difficulties and preserved reading skills, are turning to same language subtitles to support their comprehension.

27 people used subtitles to support their auditory comprehension of video.

The most frequent benefit was understanding speech. **Highest** use was when watching **films** and TV **drama**, programmes for which language comprehension is necessary to follow the narrative.

The **lowest** use was on **sport**.

What people did - study #2

A new version of a subtitle therapy programme for people with aphasia was created.

It was tested with 4 people experiencing auditory processing difficulties following a stroke.

They watched 18 videos at home and did some comprehension exercises.

The researcher tested their comprehension skills before and after therapy.

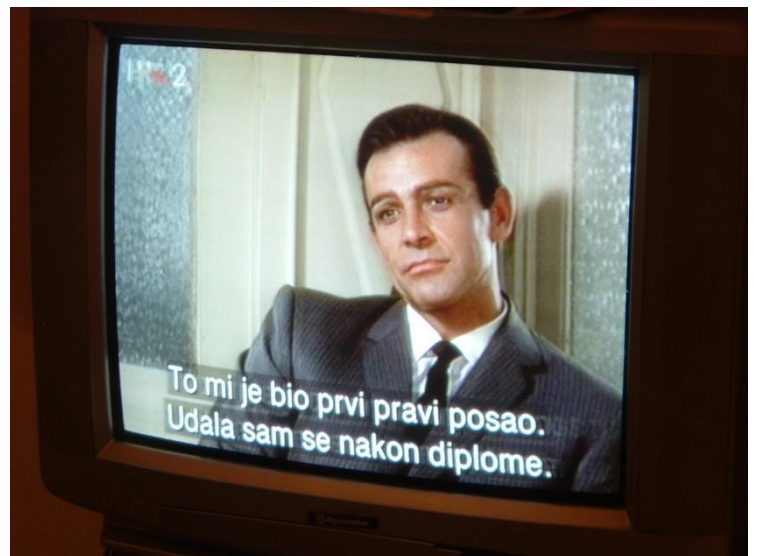
The views of the participants on subtitles and the therapy programme were collected before and after therapy.

What we found

There were **some improvements** in **2 out of the 4** participants' ability to **understand** language following the therapy programme.

People **enjoyed** the tasks and were able to access the videos and exercises **independently** from home.

It led to **increased confidence** in auditory comprehension for **2 of the 4** participants.



We think that the therapy needs run for **longer** for the therapy to be **more effective**.

Subtitles have **potential** as a speech and language therapy tool.

It is not clear whether they are effective just for understanding video, or if subtitle therapy could lead to better understanding in other contexts e.g. daily conversation.

We would like to thank all the participants in this study for making the time to help.

Their contribution is invaluable, and much appreciated.

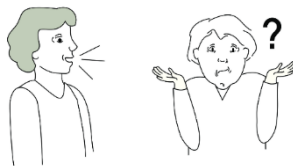
Using speech rhythm to improve language comprehension



Holly Robson

Why is this important?

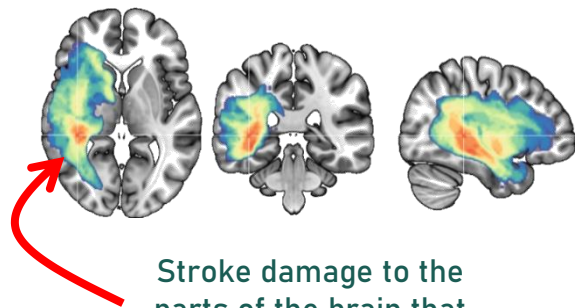
Aphasia can affect understanding as well as speaking. Speech and language therapy does not work as well for people with severe understanding problems.



Some people have comprehension problems because it is hard to decode speech. This is because speech is very complex and very fast and the parts of the brain that process speech are damaged.



A speech sound wave



Stroke damage to the parts of the brain that process speech

What we did

We asked if people with aphasia would find it easier to decode speech if it was more rhythmical.

This might make speech easier to predict and this could help people decode the most important information.

We asked people to judge if the last word in a sentence was correct.

The plane flies in the sky Yes

The plane flies in the jelly No

People listened to **normal sentences** and **rhythmical sentences**.

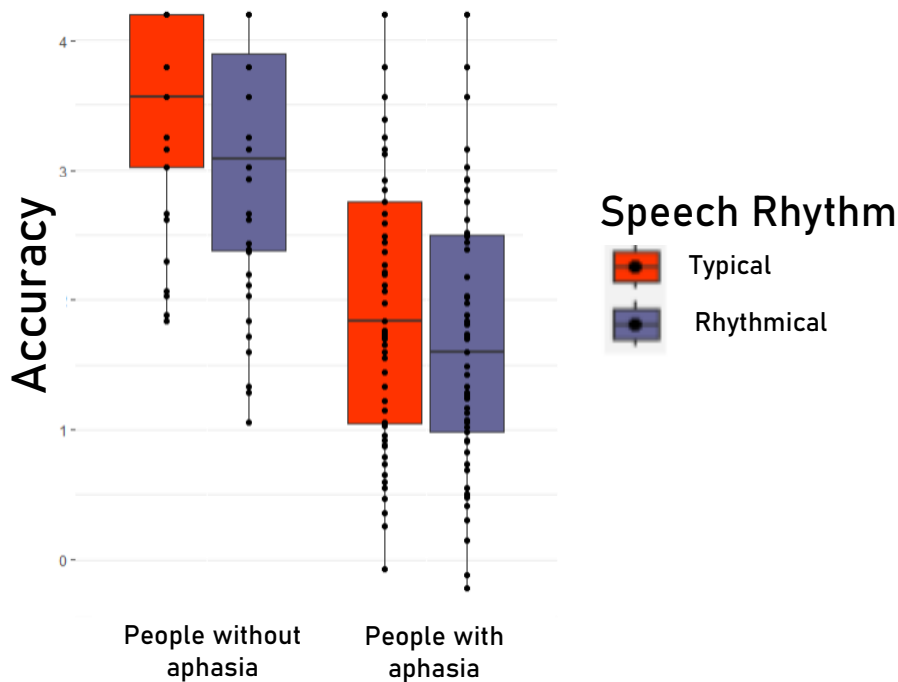
We tested **19 people with aphasia** and 10 people without aphasia.

What we found

People **without** aphasia found **rhythmical** speech **harder** to understand.

People with aphasia were **not affected** by rhythmical speech. But, unfortunately, rhythmical speech **did not improve comprehension**.

This is strange! We do not usually see patterns like this in aphasia research.



What will we do next?

We want to understand **why this happened**.

First we will compare the results from our experiment to **brains scans**.

Next we will **change the experiment** to make the rhythmical speech more predictable. This time we **warn people that the speech will be rhythmical** so that they are **expecting it**.

We hope this will help people **get more benefit from the rhythm**.

Aphasia New Music Group



Kerri
Ichikowitz



Michael
Dean



The Aphasia New Music Group is for

- people with aphasia
- family and friends
- professional music makers
- speech and language therapists

They **work together** to make **new** music.

The group has **workshops** to try out **ideas**.



The ideas turn into **songs**.



The group had two **public performances** in June 2023.



The group also **visited** the charity SayAphasia **across the country** to hold mini-workshops.

You can watch a concert video:



Or see a short film:



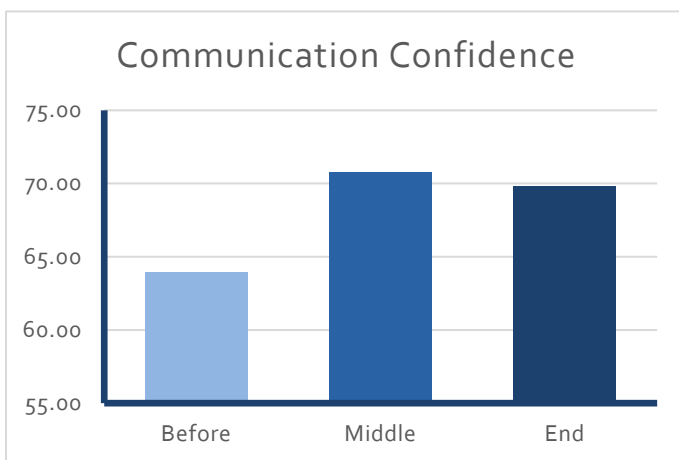
Why is this important?

There is evidence that **creative** activities **improve wellbeing**. There is also evidence that **singing in a group** can **benefit** people with **chronic health** conditions.

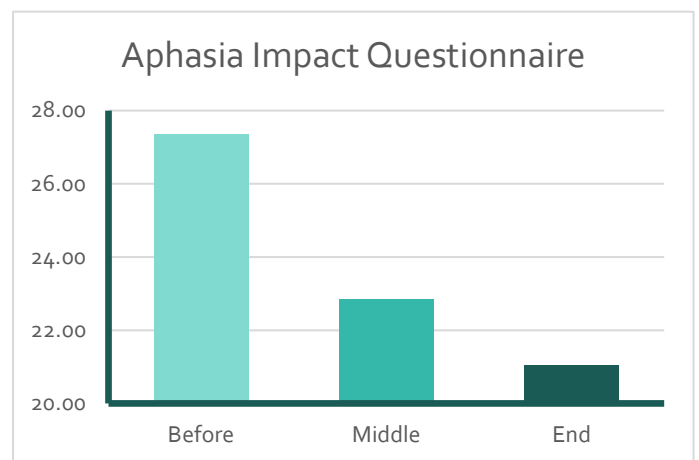
We wanted to know whether this is true for people with aphasia.

What we found

After taking part in the project, people with aphasia were **more confident** in their communication.



After taking part in the project, aphasia had **less** of an **impact** on people with aphasia's lives.



People were **most likely** to choose the words **interested, happy, good, excited, fine, confident, comfortable** and **keen** to describe how they felt about being creative and making music.

They were **least likely** to choose the words **nervous, indifferent, confused, anxious, worried, terrified, defeated** or **bored**.

When it's like the last few sessions I feel like all of the people are feeling very relax. Playing, learn, practice singing again. Building confidence for people with aphasia. Also like having new acquaintance, new friends.

I feel confident. I wrote new music... It make me confident and then it make me bold.

"...I meet some new friend and learn something new. And more confident."

We have funding for a **new project**.

We will learn whether creative music sessions benefit people in **ways that matter to them**. We will explore what these ways are, how best to show this, and put this into practice.

We hope that **more people** can be involved in future sessions, including groups outside London.

Understanding the impact of comprehension impairments on daily life



Clare
Vasiljevic



Melanie
Bowman

Why is this important?

Many people with aphasia can understand well at home, but have **difficulties understanding** when doing activities.



We want our **therapy** to impact activities that are **meaningful** to people with aphasia.

We want to **learn** about what comprehension **difficulties** look like in **daily life** from **people with aphasia and their communication partners**.

What we did

We interviewed **people with aphasia and communication partners of people with aphasia** about their **experiences** of comprehension difficulties during daily activities.

UCL

QUESTION 2

• Tell us about a conversation you **enjoyed**?

The illustration shows two people in conversation on the left, followed by an equals sign, and then a person with a thumbs up gesture on the right, representing a positive experience.

UCL

QUESTION 4

• How did it make **you feel** when you could not understand someone?

The illustration shows a person with a question mark on their forehead on the left, followed by an arrow pointing to a person with several emotion icons (happy, sad, angry, neutral) around their head on the right, representing the emotional impact of comprehension difficulties.

We analyzed the data to find out:

- **What makes it easier and harder** to comprehend?
- How people have **adapted to difficulties** comprehending.
- The **impact** on people with aphasia and their communication partners.

What we found

We already knew that there are some things that **make understanding harder**:

- **fatigue**
- **noisy** environments
- **group** environments

But people told us that they still **enjoyed socializing** in these situations.

We also knew that there are some things that **improve understanding**:

- **writing words** down
- **repeating** the message
- **slowing down** speech

Technology was useful but specific to the **individual**.

For example, some people preferred **video calls** as they could use **gesture** to help.



Some people found it **useful to tell a stranger** about their communication problems. But **not everyone felt comfortable** doing this.

How did activities change?

Some of the **activities** that people did had changed since their stroke. People had started doing activities that **needed less language understanding** e.g. meditation, playing chess, hiking. But people found **lots of value** in these.



Or, people **changed their activities** to help their understanding, e.g. watching **different TV** shows.

Lots of people described having **problems with understanding when reading** and that **losing the ability to read books was a big loss.**



How does it feel to have problems understanding?

Many people expressed **negative emotions** associated with problems understanding e.g. feeling **excluded from groups, frustration and vulnerability.**

Communication partners also expressed negative emotions and **concerns** over their partner's loss of independence.

However, people told us that having **meaningful activities was crucial to managing these emotions** and was **motivated them** to keep working on language recovery.

People with aphasia were proud of their resilience and determination.



The importance of communication partners

People with aphasia described how important it was to have **communication partners who were able to adapt** to their understanding needs.

Some communication partners felt like they **needed to know more about** how to help people with aphasia communicate.

Many people with aphasia felt that **knowing other people with aphasia had benefited them.**

The **lack of understanding of aphasia in the general public** often created barriers to activities.

What will we do next?

We are **exploring ways to adapt stories and books** to make them more accessible for people with aphasia.

We are using this information to understand **how best to measure therapy outcomes.**

We are creating a new **“understanding in daily life” rating scale** with help from people with aphasia.

If you want to be involved in creating this rating scale **contact Holly:** h.robson@ucl.ac.uk

New projects looking for participants

Research on reading comprehension #1

Why is it important?

Aphasia caused by a **stroke** can make it more **difficult** to **understand written** information.

We want to know how aphasia affects **comprehension** of short written **passages.**

What will it involve?

Visiting **Chandler House** at UCL **once** for about **two hours.**

Completing several tasks involving:

- **Reading** words and sentences
- **Remembering** numbers and words

How to take part

Contact the researchers Antonia and Mark at: ✉ mark.campion.22@ucl.ac.uk



Principal Researcher
Dr Jane Warren



Research on reading comprehension #2

Why is it important?

Aphasia caused by a **stroke** can make it more **difficult** to **ignore distracting** information in **written text**.

We want to know how aphasia affects **comprehension** of short written **passages**.

What will it involve?

Visiting **Chandler House** at UCL **once** for about **two hours**.

Completing several tasks involving:

- **Reading** words and sentences
- **Matching words** together

How to take part

Contact the researchers Daisy and Katie at: ✉ katie.best.22@ucl.ac.uk



Principal Researcher
Dr Jane Warren



Research about dysarthric speech

What is the project about?

Our project aims to help listeners better understand speech affected by a stroke, Parkinson's or other neurological problems. The speech problem is called **dysarthria**.

As a first step, we need recordings of people with dysarthria as training materials.

Who is it for?

People with moderate or severe dysarthria.

It is not suitable for people with aphasia as well as dysarthria, hyperkinetic dysarthria, or speech and language problems other than dysarthria (e.g. stuttering, dyslexia).

What will it involve?

You will visit Chandler House for a **one hour** session. You will read some simple English phrases (3-5 words in length).

You will be reimbursed **£10** for your time.

Interested in taking part or know someone who might be?

Contact the UCL Communication Clinic for more information: email: communicationclinic@ucl.ac.uk, phone: 0207 679 4249)

or contact the researcher directly: ucjulio@ucl.ac.uk

Research on carers support needs in jargon aphasia

Why is it important?

People with jargon aphasia speak in **fluent sentences**. Many of the **words** that they say **can't be understood**.

Carers are a big help to people with aphasia. We want to understand the **support** that carers receive **themselves**.

Who can take part?

Anyone who **cares** for someone with jargon aphasia. Caring could include:

- Helping **practically**
- Supporting **emotionally**
- Supporting with **life administration** for example, finances

What will it involve?

A **one hour video interview** on Microsoft Teams.

We want to find out:

- **What** support do carers receive?
- **Who** supports them?
- Is this support **helpful**?
- How could support be **improved**?

How to take part





Contact the researcher, Susie at: ✉
susie.williams2@esneft.nhs.uk



Getting in touch...

If you would like to take part in any of our research projects, please get in touch

Our contact details are:

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