Understanding the impact of the COVID-19 pandemic on the lives of people who stammer

In collaboration with

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Exceptional healthcare, personally delivered

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Executive Summary

The COVID-19 pandemic has resulted in many changes to our behaviour and communication. Whilst these changes affect us all in different ways, the specific effects on people with communication disabilities are not known. This study addresses the impact of COVID-19 related lifestyle changes on the communication of people who stammer. From the findings, we have generated guidance and recommendations to better support people who stammer during and following the COVID-19 pandemic, and to plan for future events of this type.

Project aims

1. To explore the experience of people who stammer since the start of the pandemic.
2. To investigate changes in contact with STAMMA (also known as British Stammering Association) support services.
3. To investigate changes in Speech and Language Therapy (SLT) provision for people who stammer during the COVID-19 pandemic.

What we did

We used three different approaches to address the study aims:

Exploring experiences of people who stammer: We co-designed a survey with a group of people who stammer and speech and language therapists, exploring the experiences of adults who stammer, living in the UK. The survey, which focussed on mask-wearing and video-calls, was open for 4 weeks.

Assessing change in contact with STAMMA support services: We analysed data provided by STAMMA (formerly British Stammering Association), a national charity providing information, resources and support to people who stammer and those close to them. STAMMA shared data about the contacts made with their phone, webchat, and email support services in the 75-week period from the beginning of the COVID-19 pandemic (March 2020) and also for the 75 weeks before the pandemic started.

Assessing change in contact with SLT services: We used data from the Royal College of Speech and Language Therapists outcomes database (ROOT) to investigate how episodes of care for children and adults who stammer were affected during the pandemic. We compared ROOT data for a 59-week period prior to March 2020 (pre-COVID-19) to a 59-week period during the pandemic.

Involving stakeholders

- We engaged a panel of people who stammer and specialist speech and language therapists to develop and refine our survey.
- We presented the survey results and our preliminary recommendations at an online consultation meeting, which was open to people who stammer, employers, educational professionals, health professionals and other interested parties.
- Feedback from the consultation was integrated into this report, which was also shared at the RCSLT (Royal College of Speech and Language Therapists) conference 2021.

What we found

1. Increased challenges and needs during the COVID-19 pandemic

Stammering, avoidance, and anxiety have increased during the COVID-19 pandemic:

- The majority (62%) of survey respondents reported an increase in their stammering.
- 82% reported an increase in general anxiety
- 59% reported an increase in anxiety related to stammering.
- 49% found it easier to use avoidance strategies

Video-calling for work, education or social purposes has been used much more than before the pandemic (81% of our survey respondents reported an increase).

> *"It's hard to read social cues, and so you are either a) silent or b) talking over others"*

Most people who stammer found **face-to-face interaction** more anxiety provoking (55%) and challenging (47%) during the pandemic.

Most people find using video-calls increases anxiety (65%) and makes communication more difficult (63%) compared to face-to face interaction.

Responses were varied regarding **participation** in video-calls; women and younger people reported decreased participation whilst older people and men were less affected.

Survey comments regarding video calls reflected benefits as well as difficulties:

> *"In my own controlled environment so I am relaxed. Almost harder to be embarrassed 'virtually' if I do stammer….*

Wearing a face mask increases anxiety for most (46%), compared to interacting without a mask on.

Women reported increased anxiety at higher rates when face-to-face (72%) and wearing a mask (61%).

Respondents who had a more overt pattern of stammering also reported increased anxiety when wearing a mask at higher rates (54%).

Survey comments regarding mask-wearing reflected benefits as well as difficulties:

"I use a breathing technique to manage my stammer and a mask is unhelpful for this. I've found my stammer has been worse while wearing a mask. I think it also makes it harder for the listener to see when I'm stammering which can lead to an increase in confusion or a lack of empathy, compared to when my face is visible."

"Actually [mask-wearing] makes speaking easier, I feel less exposed"

"I have still found this difficult especially when wearing a mask. However, I have found it easier as people aren't seeing the facial expressions that come with having a stammer"

2. The negative impact of the COVID-19 pandemic is more significant for some groups

Women who stammer were more likely to:

- experience increased general anxiety, and stammer-related anxiety
- decrease participation during video-calls
- feel more anxious in face-to face interactions
- feel more anxious when wearing a face mask

Younger people (aged 18-34) were more likely to:

- experience increased stammering
- experience increased stammer-related anxiety
- decrease participation during video-calls

People who stammer more overtly experienced higher rates of anxiety when interacting wearing a face mask.

3. Contacts with STAMMA support services

Support service contacts increased by 43% overall. Support requests increased, in particular from parents of children who stammer.

There was a significant change in the types of support requested during the pandemic. There was ab increase in requests for support or information concerning:

- Education
- Emotional support
- Speech and Language Therapy
- Benefits (although this remained a very small proportion)

4. Provision of Speech and Language Therapy (SLT)

Provision of SLT for people who stammer decreased during the COVID-19 pandemic. However, when SLT was available, it was as effective as before the pandemic.

The number of SLT episodes (courses of therapy) logged on the ROOT database significantly reduced during the COVID-19 pandemic from 74 to 31 (a 58% decrease).

- This could be due to redeployment of speech and language therapists to other clinical responsibilities during the pandemic.
- The reduced logging of sessions may not only reflect change in the number of SLT sessions completed, but also in less consistency in logging sessions due to increased demands on time.

The duration of an episode of SLT (the time period over which SLT took place) also decreased during the pandemic, a 46% decrease from 28 to 15 weeks. No information was available, however, about the number or spacing of sessions during each episode of care.

Improvement in therapy outcomes was as large for SLT sessions completed during the COVID-19 pandemic as for sessions completed before the pandemic.

5. What has helped during the COVID-19 pandemic?

- The majority (60%) of survey respondents reported that the only strategy they use to support

- When video calling, difficulties arise when there is increased time pressure, when it is not clear when someone has finished speaking, and when call participants talk over each other. Survey respondents reported that it helps to have some control over the call, for other participants to use hands up function to reduce interruptions, and to use the chat function when speaking is difficult.

- Survey respondents commented that the pandemic has affected the social and communication skills of people who do not stammer, due to reduced or remote contact with others. This

communication is self-disclosure of stammering.

seems to have increased awareness and understanding of communication differences, including stammering.

- The pandemic increased the provision of online SLT sessions. We asked survey respondents whether this has made a difference to their engagement with SLT:
  - o 24% reported that they would be less likely to access help from a speech and language therapist.
  - o 37% reported that they would be more likely to do so.
  - o 39% reported that it would make no difference to whether they accessed SLT.

Our Conclusions

1. Most people who stammer have experienced an increase in stammering and in anxiety during the pandemic.

2. Changes in our interactions, such as using face masks and video calls, have increased anxiety and reduced participation, in particular for women and younger people.

3. Contacts to STAMMA support services have increased overall:
   o particularly around education concerns, emotional support and accessing SLT
   o particularly from parents of younger children

4. Fewer episodes of SLT intervention were recorded during COVID-19, and the length of interventions was shorter.

5. However, when SLT intervention was provided, it was as effective as SLT offered before the pandemic.

6. Professionals (including employers, teachers and speech and language therapists) have contacted STAMMA less for support. This could reflect overall pressures during COVID reducing the perceived priority of stammering support.

7. Strategies to manage the challenges of COVID-19 have included telling others about their stammer to increase awareness and empathy, and encouraging use of visuals (e.g., raising a hand) and chat functions in video-calls.

8. The increased awareness of communication, and of mental health, during COVID-19 has helped support the increased understanding of challenges faced by people who stammer.

Our Recommendations

✓ Work and education settings should support reasonable adjustments for people who stammer when remote working, where this continues in the longer-term, to reduce the negative impacts on participation and mental health.

✓ Support offered should take account of individual needs and recognise the impacts on specific groups such as women and younger people.

✓ Increased awareness of good communication practice, particularly in remote working, will be helpful for people who stammer as well as people who do not. Considering the structure and 'etiquette' of video-call interactions will likely benefit anyone who uses video-calls for work or social reasons.

✓ Specialist SLT services have a key role to play in reducing the negative impact of the COVID-19 pandemic on people who stammer. Services require adequate funding and staffing to meet this need.

When planning future SLT provision for people who stammer, Clinical

Commissioning Groups should consider the increased need related to the:
- o well-known relationship between stammering and social anxiety.
- o increased concern about early communication development in pre-school years.

✓ Charities like STAMMA are key in providing information and resources about stammering. They also represent a community, who offer invaluable peer support for people who stammer and expertise in raising awareness and educating others about stammering.

The need for support during and transitioning out of the pandemic is clear from the increased demand on STAMMA support services. Funding for this continued work is essential.

✓ A more comprehensive examination of access to SLT during COVID-19 (for example, an audit of stammering services referrals and attendance) is recommended.

Identifying areas of increased inequity accessing SLT, and considering the factors driving this trend, will be important to ensure that all people who stammer are able to receive the necessary support to mitigate the effects of living through the pandemic.

✓ The period of transition out of the pandemic is an important opportunity to capitalise on the increased general awareness of the impacts of communication barriers, anxiety, and social isolation.

Stakeholders (SLT services, charities working with people who stammer, employers, educational institutions, researchers etc) can work in partnership to further promote awareness and understanding of stammering.

Full report

Why is this report needed?

The COVID-19 virus has resulted in a wide number of changes to our behaviour to reduce the spread of infection. Some of these changes impact how we communicate with each other. Wearing facemasks, for example, changes our interactions since we are no longer assisted by lipreading and facial expression. This is important as these help us interpret meaning and give a sense of the way a speaker feels about what has been said and how it has been communicated. Use of virtual platforms (e.g., Zoom) for formal and informal meetings also change the way we interact and make it more difficult to use non-verbal cues to indicate when we want to speak. In contrast a 'chat' box on a virtual platform potentially reduces pressure on communication. Whilst these changes to the way we communicate with each other affect all of us in different ways, little is known about how they affect people with speech, language, and communication impairments. One group who could be affected in specific ways are individuals who stammer.


Recent studies have examined the challenges of face mask wearing, including within healthcare and vulnerable populations (Marler & Ditton, 2021) but there has been insufficient data to draw specific conclusions about how to mitigate difficulties. It is known that mask wearing hampers communication and increases stress in the general population. (Campagne, 2021). Specifically, masks interfere with non-verbal communication via facial expression and with using visual speech cues to support intelligibility. There have been some attempts to address this, for example by using transparent masks (Genç, Colley, Löchtefeld, & Häkkilä, 2020), but the need for research to understand and mitigate the difficulties of mask wearing has been recognised (Bakhit et al., 2021).

The use of video-conferencing in healthcare provision ('telehealth') has been investigated prior to the COVID-19 pandemic (Fairweather, Lincoln, & Ramsden, 2016), as well as during the pandemic (Tenforde et al., 2021). During COVID-19, studies show mixed responses to telehealth provision, e.g., convenience and eliminating travel time are benefits to this model of delivery (Tenforde et al, 2021). Limitations to the availability, affordability or experience with digital technology have been identified as significant barriers (Sounderajah et al. 2020; Fisk, Livingstone & Winona, 2020). Little is known, however, about how people with communication difficulties access video platforms for work and social activities. A search of recent literature did not find any studies specifically looking at the impact of video calling on the

communication and experience of people who stammer.
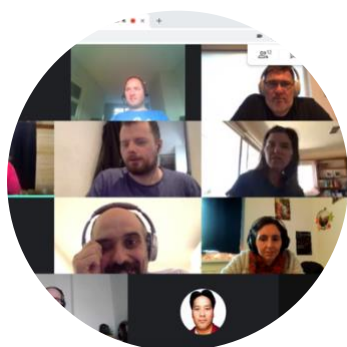
Given that some people who stammer may have experienced increased needs and challenges during the COVID-19 pandemic, it is important also to consider how these needs can be met, for example by SLT or contact with other sources of support. COVID-19 has interrupted delivery of SLT services generally, with services being reduced and face to face therapy being unavailable (Tohidast, Mansuri, Bagheri, & Azimi, 2020; Chadd, Moyse & Enderby, 2021).[1] Evidence is lacking, however, regarding the specific impact on people who stammer, for whom access to SLT services is often already limited. Analysis of changes in the capacity of SLT services to meet the needs of people who stammer during the pandemic is important for planning services to address the long-term consequences on service users, and the possible need to respond to future events of this type. STAMMA (also known as the British Stammering Association) is a national charity providing support and advice to people who stammer and those wishing to better understand stammering. Exploring the number and types of contact made to STAMMA during the pandemic can also be an important indicator of the changing needs and difficulties of people who stammer.

This study addresses the impact of COVID-19 related lifestyle changes on people who stammer, by using survey data to explore experiences during the pandemic, and by examining changing patterns of contact with STAMMA and SLT services. From these findings, we have generated recommendations aimed to better support people who stammer during and following the COVID-19 pandemic, and to plan for future events of this type.

We used several different approaches to address the study aims:

1. **Exploring experiences of people who stammer:** We co-designed a survey with a group of people who stammer and speech and language therapists, exploring the experiences of adults who stammer, living in the UK. The survey, which focussed on mask-wearing and video-calls, was open for 4 weeks.

2. **Assessing change in contact with STAMMA support services:** We analysed data provided by STAMMA a national charity providing information, resources and support to people who stammer and those close to them. We compared data about the contacts made with their phone, webchat, and email support services since the beginning of the

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[1] Video call image By Pchelelo - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=89898906

COVID-19 pandemic (March 2020) with an equivalent period before the pandemic started.

3. **Assessing change in contact with SLT services:** We used data from the Royal College of Speech and Language Therapists outcomes database (ROOT) to investigate how episodes of care for children and adults who stammer were affected during the pandemic. Again, we compared data gathered during the pandemic to an equivalent period preceding the pandemic.

1. Exploring experiences of people who stammer

What we did

We developed an online survey for people living in the UK who stammer and are aged 18 and over. The survey considered changes in stammering and anxiety during the pandemic, and how COVID-19 - related changes (such as face masks and virtual meeting platforms) have impacted communication.

The initial content of the online questionnaire was developed with reference to the limited available peer-reviewed research literature and by identifying themes from other sources of information regarding living with stammering during COVID-19 (e.g., Stamily and STAMMA websites, American Speech-Language Hearing Association, Australian Stuttering Research Centre). A panel of people who stammer and specialist speech and language therapists helped us develop the survey tool by giving detailed feedback on the draft questions and piloting the revised survey format. The final version of the survey is included as an appendix.

Demographic data (gender, age, ethnicity, geographical location) were collected to investigate whether these factors influenced experience of the pandemic. As social anxiety is greater in the stammering population, and increased anxiety could be predicted in relation to COVID-19, we included questions specifically addressing changes in anxiety. We used a combination of multiple-choice questions and short free text responses to allow respondents to give additional information about difficulties they have experienced relating to these questions. In addition, four open-ended questions allowed respondents to report details of mask and virtual platform use, use of communication strategies, access to SLT and other positive and negative experiences related to COVID-19. Example free text responses are included in blue in the following section.

The survey was distributed to adults who stammer via Bristol Speech and Language Therapy Research Unit (BSLTRU) social media channels, STAMMA website and social media channels, emails to support groups for people who stammer, SLT Clinical Excellence Networks, and a City Lit mailing list for people who stammer.

What we found

Demographic information

The questionnaire was live for 4 weeks, in which time we received 97 responses from people who stammer, representing a range of age, gender, occupational status and locations across the UK. The ethnicity of respondents is broadly representative of the UK population; however, the absolute numbers of responses from Black and minoritised ethnic groups were not large enough for us to explore differences in the experiences of people who stammer related to ethnic identity.

Red dots show survey response locations across UK

Ethnicity	% response
White	88
Mixed	1
Asian	5
Black	2
Arab	1
Other	1
Prefer not to say	2

Responses represented all regions of the UK: the majority of respondents (23%) were from Greater London, however, 18% of respondents lived in the north of England, 14% in the midlands, 8% in the east and 23% in the south of England. We also received responses from Scotland (3%), Wales (4%) and Northern Ireland (2%).

We received responses from people who stammer across age ranges from young adults to retirement-aged adults. Adults in the 25-34, 35-44 and 45-54 age brackets were slightly under-represented relative to

national UK population data for 2020 (Office of National Statistics, 2021). Adults aged 55 and above, however, were relatively over-represented.

Age (years)	% response
18-24	16
25-34	25
35-44	23
45-54	20
55-64	7
65+	9

We used postcode data to identify the socio-economic status of respondents using the index of multiple deprivation for England (https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019), Wales (https://gov.wales/welsh-index-multiple-deprivation), Scotland and Northern Ireland. Socio-economic status (SES) is described here as quintiles (5

groups of 20% of the population), with 1 being the most deprived 20% of the population, and 5 being the least deprived 20%. Responses represented a good spread across the SES quintiles.

SES quintile	% response
1	16
2	26
3	18
4	23
5	14
unknown	3

The gender distribution of respondents was broadly reflective of the UK population, but was a substantial over-representation of women who stammer, as the male to female ratio in the adult stammering population is around 4:1.

Gender	% response
male	52
female	47
nonbinary	1

The majority (70%) of respondents were in paid employment, a slightly lower proportion than the national figure of 75.2% (for April 2021), 4% were in unpaid employment, 12% were not in employment and 13% of respondents were in education (around 3 times the proportion for the UK overall, which is 4%).

Occupational status	% response
In paid work	70
In unpaid work	4
Not working	12
In education	13

NHS North Bristol NHS Trust

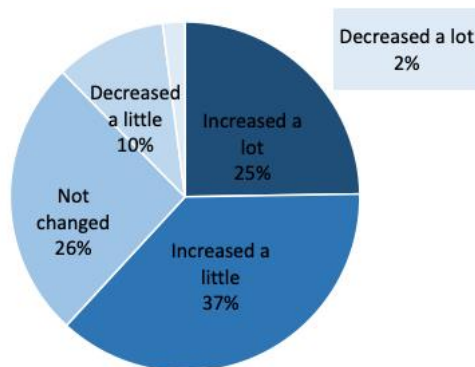## Stammering and anxiety during the COVID-19 pandemic

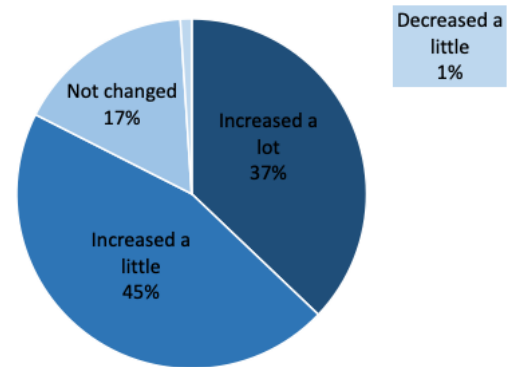The majority (62%) of respondents reported an increase in their stammering since the beginning of the COVID-19 pandemic (25% said their stammering had increased a lot and 37% said it had increased a little).

Anxiety has also increased during this time: 82% reported an increase in general anxiety, and 59% reported an increase in anxiety related to stammering. Previous research has shown that some people who stammer will avoid situations in which they anticipate stammering. The majority of respondents reported that it had become easier to use avoidance strategies during the pandemic (a little easier to avoid speaking, 28%; a lot easier to avoid speaking 17%).
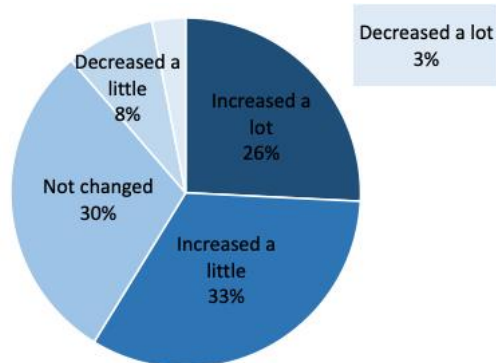
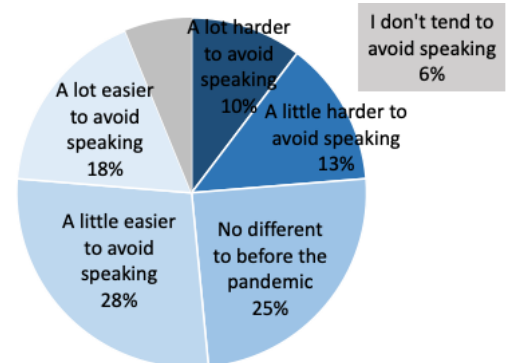**Overall, since the COVID-19 pandemic started my stammering has:**

Decreased a lot 2%
Decreased a little 10%
Increased a lot 25%
Not changed 26%
Increased a little 37%

Since the COVID-19 pandemic started my general anxiety levels have:

Decreased a little 1%
Not changed 17%
Increased a lot 37%
Increased a little 45%

Since the COVID-19 pandemic started my anxiety levels about stammering have:

Decreased a lot 3%
Decreased a little 8%
Increased a lot 26%
Not changed 30%
Increased a little 33%

Since the COVID-19 pandemic started I have found it:

A lot harder to avoid speaking 10%
I don't tend to avoid speaking 6%
A lot easier to avoid speaking 18%
A little harder to avoid speaking 13%
A little easier to avoid speaking 28%
No different to before the pandemic 25%

When considering changes in stammering, respondents noted a number of factors including lack of social contact and reduced speaking opportunities, general anxiety, and stress, increased online communication, mask-wearing and working from home.

"I am a lecturer and need to record hours of lectures for students. This has been a challenging activity and I have been recording many, many takes, and then massively editing, to try to remove any stammering. It is ridiculous and exhausting."

The factors respondents commented on as influencing their anxiety included life generally feeling more difficult, worries about health, the pressures of communicating remotely, reduced opportunities for speaking and changes to ways of working.

"I started a new job - fully remote obviously - during the pandemic which brings with its own challenges of forming relationships with people on video, without the normal social cues of in-person interaction. I worry that people will think I'm a stupid because I can't get a sentence out properly"

"I need to talk to people daily to maintain confidence in my ability to use my speech techniques and my anxiety does increase sometimes as a result of limited work/social contact"
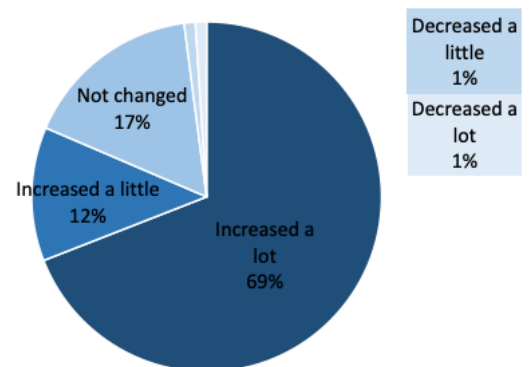
Use of video calling

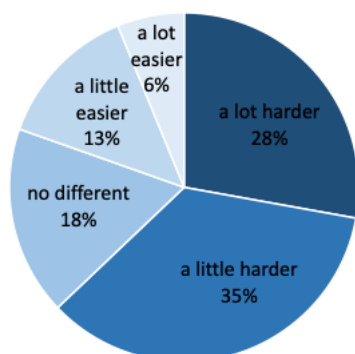Video-calling has been used much more than before the pandemic (81% of respondents report increased use: 69% said use had increased a lot, 12% said a little).

Since the COVID-19 pandemic started the time I spend on video calls has:

Not changed 17%

Increased a little 12%

Increased a lot 69%

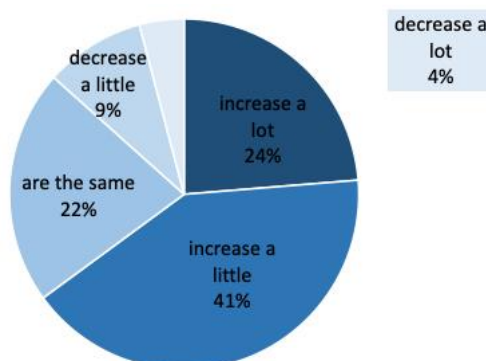Decreased a little 1%

Decreased a lot 1%

Sixty-three percent of respondents reported that video-calling was harder than having a face-to-face interaction, and 67% reported that anxiety was greater than during face-to face interactions.

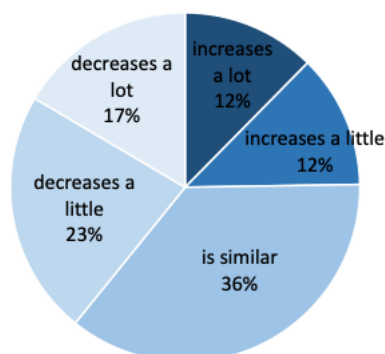**Compared to face-to-face situations, I find using video calls to communicate:**

- a lot easier 6%
- a little easier 13%
- no different 18%
- a little harder 35%
- a lot harder 28%

Compared to face-to-face situations, when I speak on video calls, my anxiety levels:

- decrease a lot 4%
- decrease a little 9%
- are the same 22%
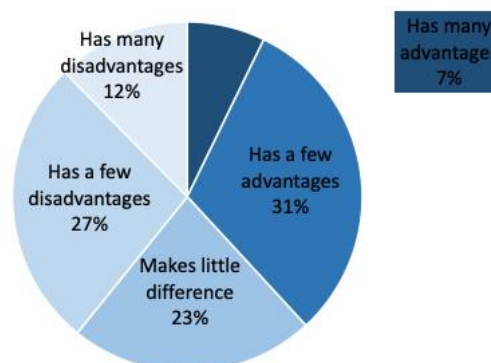- increase a little 41%
- increase a lot 24%

However, there were more varied responses about the impact of using video-calling on participation in conversations. When asked to compare to face-to-face situations, 41% of participants reported that participation in discussion during video calls decreased, 37% found it to be similar, and 22% felt that their participation increased. Further exploration showed that participation in video-calls differed between men and women, and between older and younger people (see later section for details).

Compared to face-to-face situations, my participation in discussions on video calls:

- increases a lot 12%
- increases a little 12%
- is similar 36%
- decreases a little 23%
- decreases a lot 17%

There were also varied responses regarding the (dis)advantages of video calls with similar numbers of respondents indicating advantages (38%) and disadvantages (39%).

For me, speaking on video calls:

- Has many disadvantages 12%
- Has a few disadvantages 27%
- Makes little difference 23%
- Has a few advantages 31%
- Has many advantages 7%

The advantages of video calls mentioned by respondents included the ability to use the text 'chat' function and 'raise hand' icon to take part in discussions, control over visibility (choice of having camera on or off) and control over one's environment (taking 'time out', feeling more comfortable).

"I guess the advantages would be the decrease of intensity and need for eye contact, as it is hard to see where you are looking. Video calls can sometimes be in the comfort of your own home so possibly less pressure, at least that's my experience. If it gets too much, I can turn the camera off."

"In my own controlled environment so I am relaxed. Almost harder to be embarrassed 'virtually' if I do stammer. You don't feel the embarrassment as much as you're alone physically"

Disadvantages included the difficulty of judging interactions (especially turn-taking), being less able to use non-verbal communication such as body language and technical issues (for example, having to repeat words or phrases, people mistaking a stammered moment for a break in internet connection).

"When I think there's a pause for me to speak, but I'm talked over, I know if I stop talking and wait for the other person to finish speaking, I will find it very hard to start again and will invariably stammer through the repeated sentence. Therefore, sometimes I just carry on speaking but this causes anxiety that I'm seen as being rude. Also, whilst waiting for my turn to speak, the anxiety of speaking for fear of stammering will start to build up, and if it gets too tense for me then I will not speak at all."
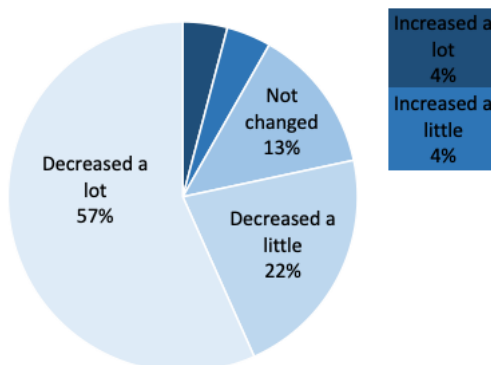
"The small delay, leading to awkward silences and people interrupting each other. Not being able to use body language as much. There being a "spotlight" on one speaker, and everyone takes turns speaking vs there more of a shared experience and a flowing conversation in a normal meeting. Participation is easier to opt out of because you're not looking at each other (more for non-video calls)".

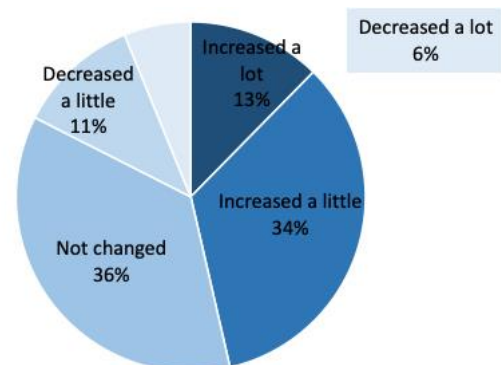## Face-to-face interaction, with and without face masks

Face-to-face interaction has reduced for the majority of people during COVID-19: 57% of respondents reported a large decrease and 22% a small decrease in time spent communicating in person. The challenges of face-to-face interactions and anxiety during face-to-face have increased for most respondents (46% of respondents faced increased challenges; 55% of respondents faced increased anxiety). Relatedly, interacting when wearing a facemask increased anxiety for most respondents (46%). However 36% reported no difference compared to interacting without a mask and 18% found that they were less anxious.
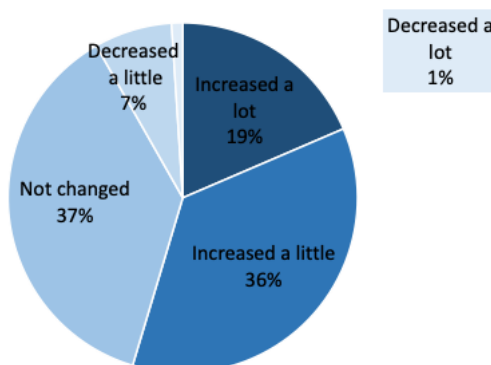
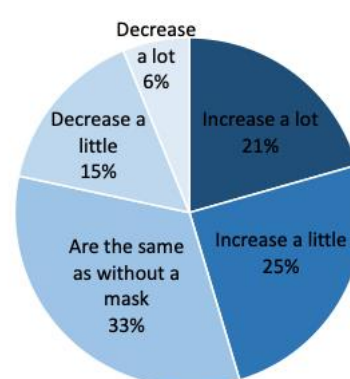**Since the COVID-19 pandemic started, the time I spend speaking in face-to-face situations has:**

Decreased a lot 57%
Not changed 13%
Decreased a little 22%
Increased a lot 4%
Increased a little 4%

Since the COVID-19 pandemic started, the challenges I have speaking face-to-face have:

Decreased a lot 6%
Increased a lot 13%
Decreased a little 11%
Increased a little 34%
Not changed 36%

Since the COVID-19 pandemic started, when speaking face to face, my anxiety levels have:

Decreased a little 7%
Increased a lot 19%
Decreased a lot 1%
Not changed 37%
Increased a little 36%

When speaking with a face mask, my anxiety levels:

Decrease a lot 6%
Increase a lot 21%
Decrease a little 15%
Increase a little 25%
Are the same as without a mask 33%

Regarding experiences of face-to-face interactions during the pandemic, survey respondents noted having fewer opportunities, which resulted in feeling out of social practice and having concerns that social skills had reduced. This, in turn, influenced the likelihood of stammering, which again affected anxiety and nervousness.

"[I] feel my social skills, non-verbal communication and stammer have all got worse. Feel more anxious".

"I haven't spoken to many people due to being in the house, this has made me overthink situations more and increased my anxiety".

"I did notice that once I spoke to people face-to-face again during the winter tier system, after a long time in lockdown, I almost had to relearn or reset the methods I have developed in managing my stammer".

Respondents gave varied responses about the impact of mask-wearing. Positive experiences included finding it reduced stammering, increased feelings

of security, and reduced worry about conversation partners seeing visual signs of stammering (e.g., movement or increased tension in the mouth). Conversely, others reported that the mask covering facial movements when stuttering increased confusion and was a barrier to communication. Additional negative impacts were breathing difficulties (in particular the use of breathing techniques being disrupted by the mask), the need to speak louder, increased feelings of self-consciousness and increased moments of stammering.

"I use a breathing technique to manage my stammer and a mask is unhelpful for this. I've found my stammer has been worse while wearing a mask. I think it also makes it harder for the listener to see when I'm stammering which can lead to an increase in confusion or a lack of empathy, compared to when my face is visible".

"Actually, makes speaking easier, I feel less exposed".

"Have to speak louder to be heard which seems to exacerbate stammer. Feel more self-conscious about stammer, increases sense of time pressure as listener can't really see I'm still talking. Seem to get interrupted more. I can't see listener's body language properly either, so increases anxiety about listeners response."

"The ability to take breath is impossible and I have really struggled. The fact the person I am speaking to can't see what is going on has caused some very sad situations"

"I think the covering of my mouth actually decreases the anxiety I feel when I stammer. Mainly due to the fact that the person I am talking to cannot see the visible aspects of me".

Using the phone

Most respondents (55%) increased their phone use during COVID-19 (increased a little 33%, increased a lot 22%). However, most reported no change in challenges experienced (52%) or in anxiety (48%), compared to using the phone before the pandemic.

Since the COVID-19 pandemic started, the time I spend speaking on the phone has:

Decreased a little 6%
Decreased a lot 5%
Increased a lot 22%
Not changed 34%
Increased a little 33%

Since the COVID-19 pandemic started, the challenges I have speaking on the phone have:

Decreased a lot 2%
Decreased a little 11%
Increased a lot 12%
Increased a little 23%
Not changed 52%

Since the COVID-19 pandemic started, when speaking on the phone, my anxiety levels have:

Decreased a little 7%
Increased a lot 11%
Decreased a lot 2%
Not changed 49%
Increased a little 31%
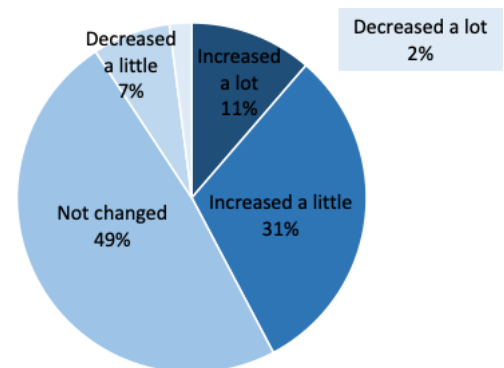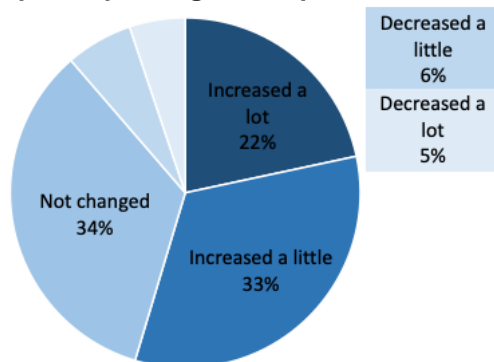
The majority of respondents' comments indicated that using the phone was a particularly difficult mode of communication in general, and that the pandemic had not really had any effect on this experience. However, some people felt that it had been necessary to use the phone more, which has desensitised them to the negative associations regarding phone use.
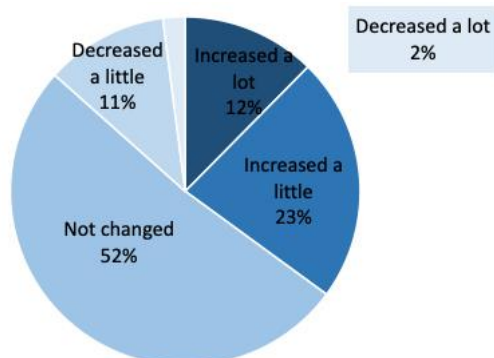
"I still don't like it!"

"I use my phone more often for work. Use has increased, anxiety is the same".

"The increased exposure to phone calls has probably decreased my anxiety which has improved my stammering on phone calls".

**Impacts on women, younger people, and people with more overt stammering**

We compared responses from male and female respondents to consider whether these genders had different experiences during the pandemic. The survey was only completed by a single non-binary respondent, so we were not able include those data in this analysis.
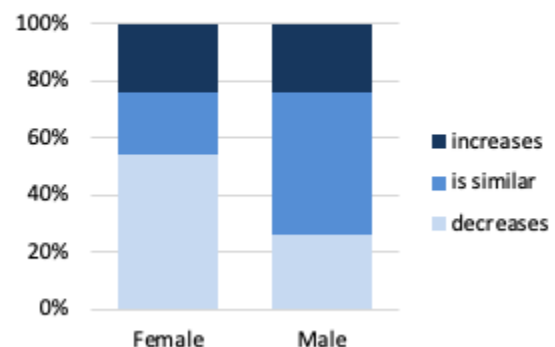
We found significant gender differences in general anxiety[2] and stammering-related anxiety[3]. All female respondents reported increased general anxiety during the pandemic. For men, although the majority (66%) also reported an increase, 32% reported no change, and 2% reported a decrease. For stammering-related anxiety, 76% of female respondents reported increased levels whilst an equal proportion of men reported increased anxiety as those who experienced no change from pre-COVID-19 levels (both 44%).

Since COVID-19 started, my anxiety about stammering has:
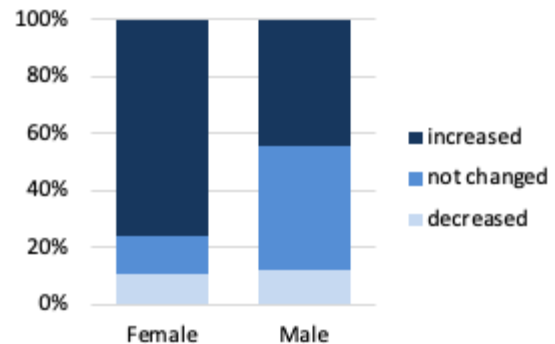
Women and men also reported significantly different experiences participating in video-calls[4]. Most women (54%) reported decreased participation, however men most commonly reported similar participation in video-calls compared to face-to-face interactions.

Compared to face-to-face, my participation in video-calls:

Since COVID-19 started, my general anxiety has:

We found significant gender differences in anxiety during face-to-face interactions[5] and face mask wearing[6]. The majority of women (72%) reported that they were
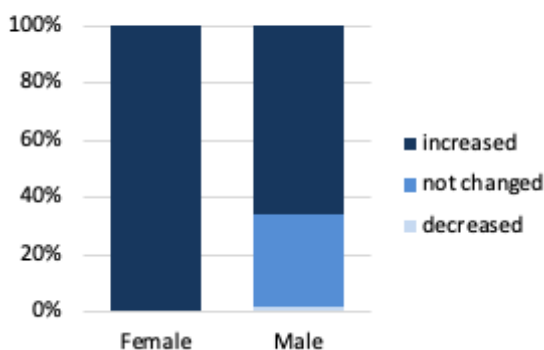
[2] p < .001, Fisher's exact test; V = .445, large effect size
[3] p = .002, Fisher's exact test; V = .354, large effect size
[4] p = .006, Fisher's exact test; V = .325, medium effect size

[5] p = .001, Fisher's exact test; V = .363, medium effect size
[6] p = .012, Fisher's exact test; V = .303, medium effect size

more anxious during face-to-face interactions compared to before COVID-19, whilst the majority of men (54%) reported no change.
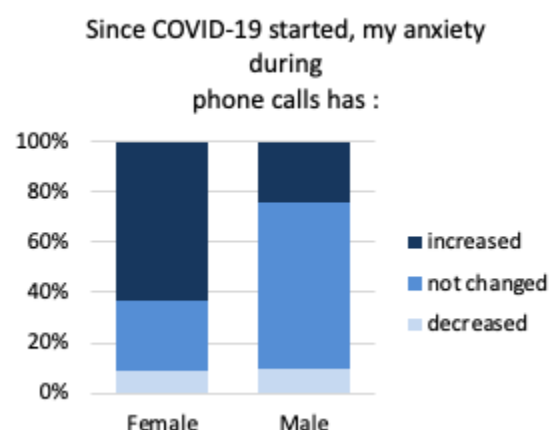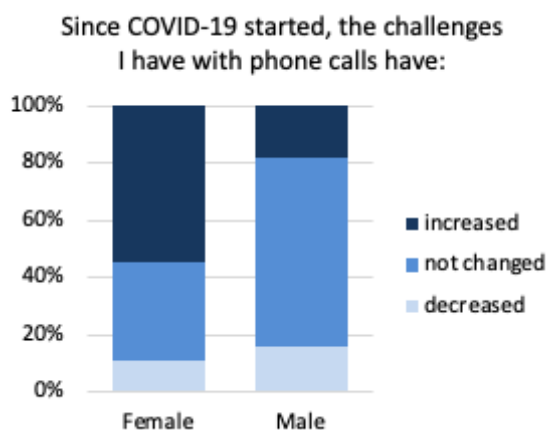
Since COVID-19 started, my anxiety in face-to-face interactions has:
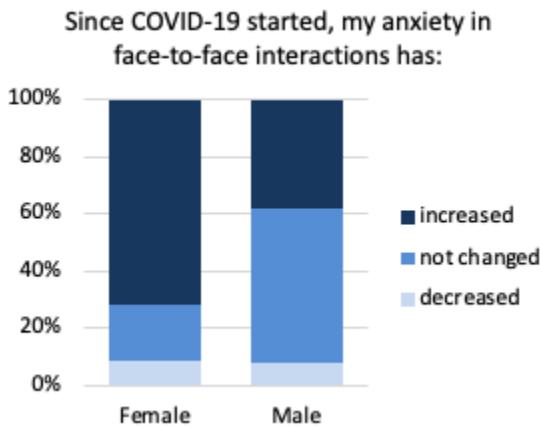
The majority of women (61%) also reported increased anxiety when wearing a face mask, whilst the majority of men (44%) reported no change.

When speaking with a face mask, my anxiety levels:
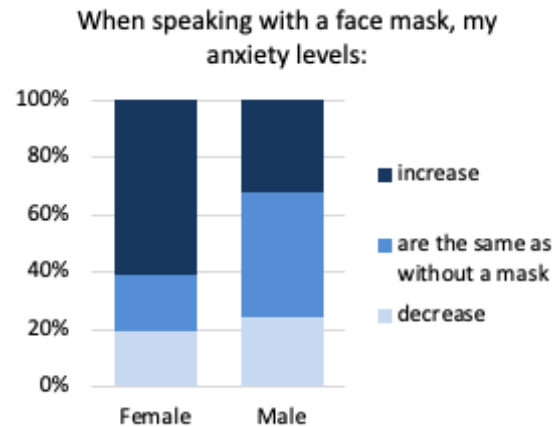
Women and men did not significantly differ in the time spent in phone-calls (relative to pre-COVID-19), however, there were significant differences in challenges[7] and anxiety[8] experienced when using the phone.

The majority of women found that phone-calls were more challenging (54%) and increased their anxiety more (63%) than before COVID-19. In comparison, the majority of men reported no change in the challenges (66%), or anxiety (66%) experienced during phone-calls, compared to before the pandemic.

Since COVID-19 started, the challenges I have with phone calls have:

Since COVID-19 started, my anxiety during phone calls has :

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[7] p = .001, Fisher's exact test; V = .382, large effect size

[8] p = < .001, Fisher's exact test; V = .405, large effect size

We also considered age-related differences in the pandemic experiences of people who stammer, by comparing 3 age groups (18-34 years, 35-50 years, 51-66 years).

We found significant age effects related to change in stammering[9] and stammering-related anxiety[10]. A large proportion (75%) of younger people (18-34 years) reported increased stammering during COVID-19. However, for the older age groups, this proportion was lower - 55% of respondents aged 35-50 years and 42% respondents aged 51-66 years (for this oldest age group most people (50%) reported no change).


Since COVID-19 started, my stammering has:
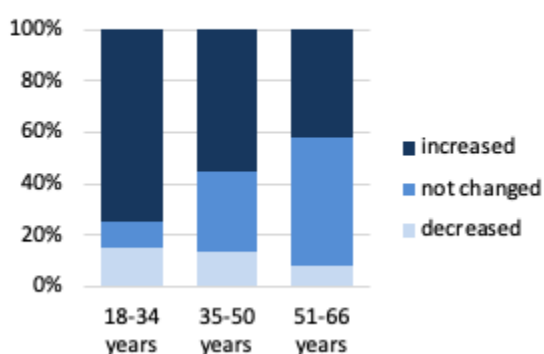
Seventy three percent of respondents aged 18-34 years also reported increased anxiety related to stammering during COVID-19. In contrast, 50% of respondents aged 35-50 years and 42%

respondents aged 51-66 years reported increased anxiety about stammering (again, for this age group most people (58%) reported no change).

Since COVID-19 started, my anxiety about stammering has:
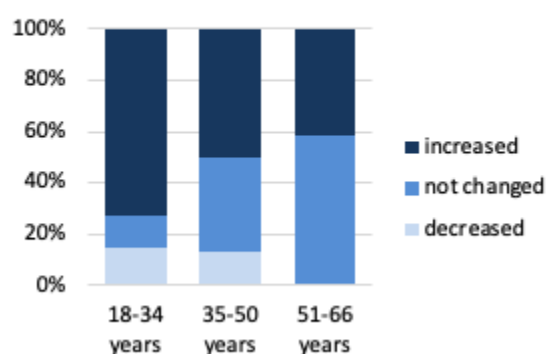
Participation in video-calls also differed significantly for the different age groups[11]. The majority of respondents aged 18-34 years reported decreased participation, whilst the majority of respondents aged 35-50 (47%) and aged 51-66 (58%) reported similar participation compared to face-to-face interactions

Compared to face-to-face, my participation in video-calls:

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[9] p = .033, Fisher's exact test; V = .234, medium effect size

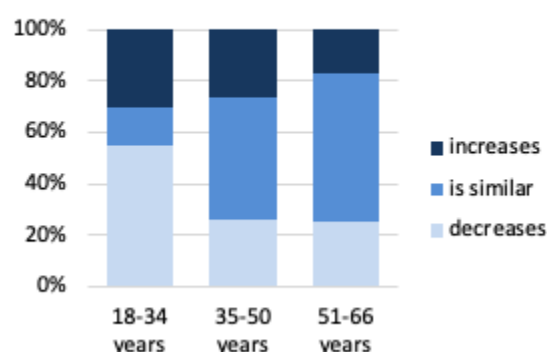[10] p = .014, Fisher's exact test; V = .261, large effect size

[11] p = .006, Fisher's exact test; V = .275, large effect size

The three age groups did not significantly differ in the time spent in phone-calls (relative to pre-COVID-19). However, there were significant differences in challenges[12] and anxiety[13] experienced during phone calls. The majority of respondents aged 18-34 (53%) found phone-calls more challenging than before COVID-19 whilst the majority in the 35-50 (63%) and 51-66 (50%) age groups reported no change. The majority of respondents aged 18-34 (60%) also reported increased anxiety during phone-calls, whilst the majority in the 35-50 (61%) and 51-66 (50%) age groups reported no change.

Finally, we compared the experiences of respondents who described themselves as having more overt features of stammering, to those with more covert features. We found only one significant difference between these groups, which related to anxiety speaking whilst wearing a facemask[14]. Anxiety increased for the majority (54%) of respondents in the 'more overt' group when speaking with a face mask compared to without a mask. In contrast, for the 'more covert' group, relatively equal numbers of respondents reported that wearing a mask increased anxiety (33%), made no difference (30%) and decreased anxiety (36%).

Since COVID-19 started, the challenges I have with phone calls have:
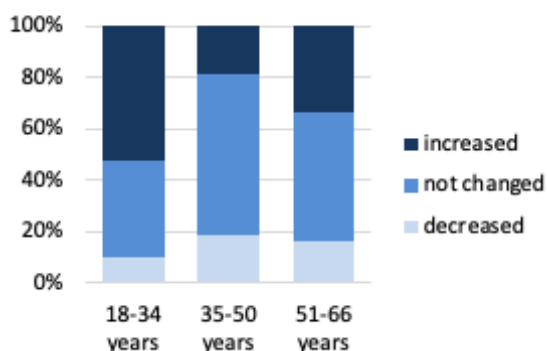
Since COVID-19 started, my anxiety during phone calls has :
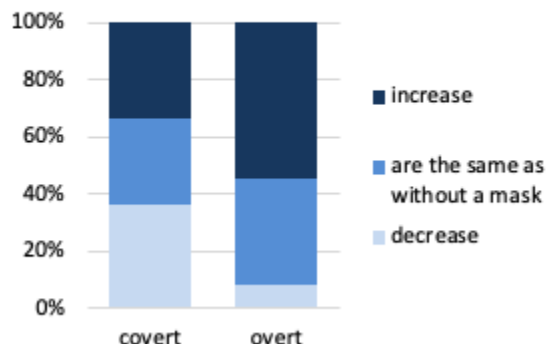
When speaking with a face mask, my anxiety levels:

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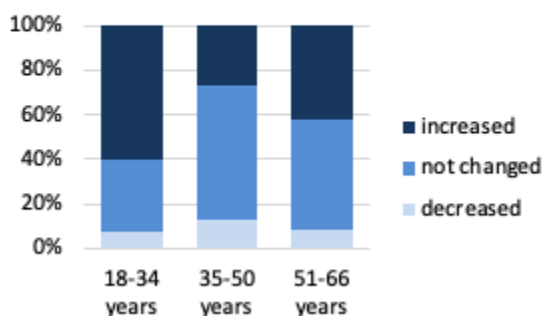
[12] p = .032, Fisher's exact test; V = .235, medium effect size
[13] p = .046, Fisher's exact test; V = .225, medium effect size

[14] p = .018, Fisher's exact test; V = .340, medium effect size

Factors that have helped during the pandemic or could help in future

The majority (60%) of participants reported that the only strategy they use to support communication is self-disclosure of stammering. Just over a quarter of respondents (28%) do not use any strategies, and 4% reported that they use a combination of the strategies listed in the survey (self-disclosure, using a transparent mask or a mask telling people that you stammer, using a card explaining that you stammer). The remaining 8% of respondents described other strategies including notes, breathing techniques, avoidance, slowing speech rate and fluency techniques (such as fluency shaping and block modification).

"Disclosure helps because it makes clear why fluency is an issue and ensures I am confident people do not jump to conclusions about confidence, competency, nerves etc".

"It took a weight off my shoulders (self-disclosure)"

"I think particularly as you get older and especially to do with the stigma that surrounds things like ableism etc, explaining to people that it is something you struggle with and cannot help makes them far more likely to accept it as part of you".

Have you used any of the following strategies to help communication?	%	Other communication strategies identified	count
Self-disclosure (explaining you have a stammer)	60	using notes	1
A transparent mask so that people can see if you are stammering	0	breathing techniques	2
A card to show people that explains you stammer	0	avoiding words/avoiding speaking	4
A mask that lets people know you stammer	0	fluency techniques (fluency shaping, block modification)	2
other	8	slowing speech rate	2
Any combination of the above	4		
None	28		

We also asked a broader question about positive factors and experiences during the pandemic. Here, some respondents mentioned that the general communication changes that have been necessary during the pandemic have had positive effects on public attitudes to stammering.

*"Communicating in different ways has made everyone kinder".*

"I think social anxiety is better understood because of COVID- we're all a bit rusty at socialising, which is comforting."

We asked respondents if the addition of online sessions to SLT service provision would make them more or less likely to access SLT services. Twenty-four percent of respondents reported that they would be less likely to access help from an SLT (a lot less 15%, a little less 8%), 37% reported that they would be more likely (a lot more 16%, a little more 21%) and 39% reported that it would make no difference to whether they accessed SLT.

Many Speech and Language Therapy services have moved online to virtual platforms. This would make me:
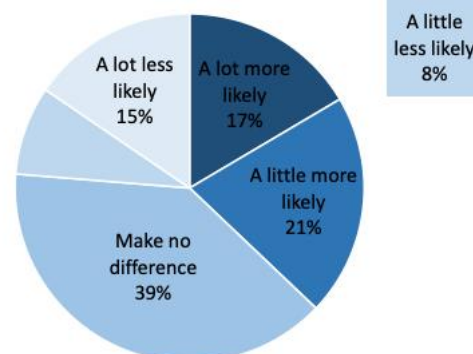
to access help from a speech and language therapist

We asked respondents to comment on their experiences of accessing SLT since the COVID-19 pandemic started. Some had accessed SLT by teletherapy and had found this more accessible than, or an acceptable alternative to, face-to-face sessions. Others commented that SLT support for stammering has been difficult to access or they have been put off by lack of face-to-face therapy options. In addition, respondents have accessed other support e.g., Starfish resources/ STAMMA/ online support groups.

We also asked about support respondents would find most useful from SLT services or organisations such as STAMMA in future. Social media exposure to increase public awareness, and other approaches to increase awareness and reduce stigma around stammering, were mentioned as useful interventions. Respondents noted that increased access to SLT, and information about effective SLT programmes would be beneficial, as would specific support around stammering e.g., at work and on the phone. Opportunities to connect with other people who stammer were seen as very helpful.

2. Contacts with STAMMA support services during COVID-19

What we did

We analysed data provided by STAMMA (formerly British Stammering Association), a national charity providing information, resources and support to people who stammer and those close to them.

STAMMA shared data about the contacts made with their phone, webchat, and email support services in the 75-week period from the beginning of the COVID-19 pandemic (23/03/2020-28/01/2021) and also for a 75-week period before the pandemic started (17/05/2019-22/03/2020).
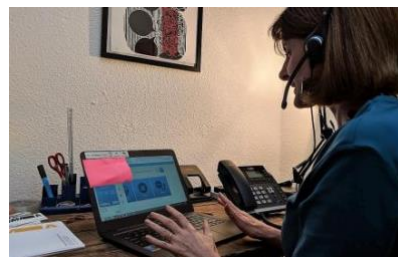
Data from the telephone helpline and email services were available for the entire pre-COVID-19 and COVID-19 interval. The webchat service was launched post lockdown on 15.5.21, so data were available only after that date.
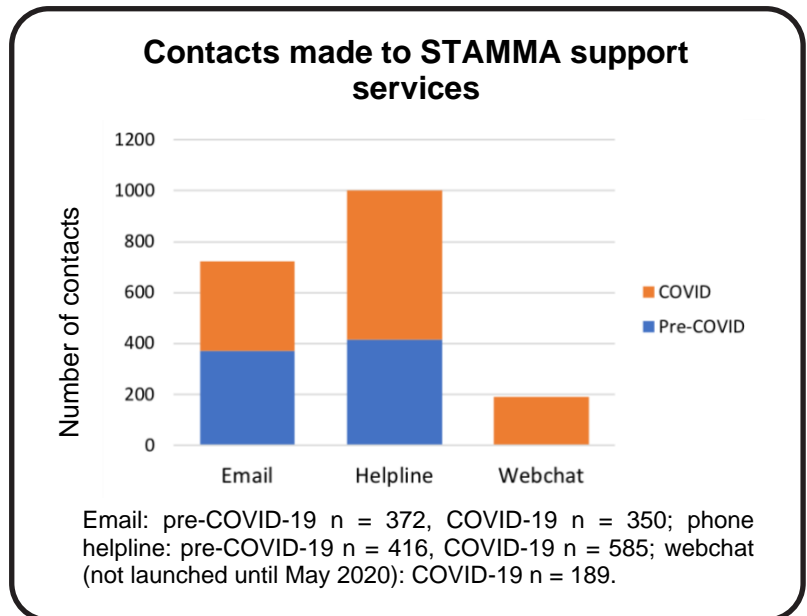
When logging contacts to STAMMA, the volunteer responding to the contact selects a category within which the contact best falls. The categories available for selection are:

- Education – contacts relating to school, college, or university.
- Employment – contacts where the topic or issues raised are focused on employment.
- Therapy – questions about availability of stammering therapy and courses, what they involve, and how to access them.
- Information support - Providing information about stammering.
- Emotional support – this may include a variety of areas such as: people who would like to chat about stammering in general, are perhaps looking to connect with STAMMA, to share something they have seen or heard, or to be given the space to talk

about their thoughts or experiences related to stammering.
- Crisis – contacts from people who are experiencing a crisis which includes people who report that they are feeling desperate or have felt suicidal recently.
- Legal enquiries – this could be people contacting STAMMA with questions about enforcement of the Equality Act, or to enquire about taking legal action against an employer.
- Benefits – questions around state benefits related to stammering, such as Personal Independence Payments.
- Other – any contact not fitting one of the above categories.

What we found

Summary of contacts with STAMMA support services

We included 1912 contacts made to STAMMA support services: 788 occurred in the pre-COVID-19 time period and 1124 during COVID-19. This was a significant overall increase of 43%[15]. Considering contacts by type, we compared numbers of helpline calls and emails before and during COVID-19 (the webchat service was launched during the pandemic, so was not included here). We found that the increase in contacts during COVID-19 was accounted for by helpline calls, which increased by 40.6%, while email contacts showed a very small decrease of 5.9%[16].

Contacts made to STAMMA support services

Email: pre-COVID-19 n = 372, COVID-19 n = 350; phone helpline: pre-COVID-19 n = 416, COVID-19 n = 585; webchat (not launched until May 2020): COVID-19 n = 189.

Data regarding the geographical location of contacts was only available for the post lockdown period. The majority (49%) of contacts were made by people in England with far fewer contacts made by people in other parts of the UK (Scotland 2%, Northern Ireland 1% and Wales 1%) and internationally (2%). For 45% of all contacts during COVID-19 the location of the contact was not recorded.

	Country				Inter-national	Not recorded	Total
	England	**Northern Ireland**	**Scotland**	**Wales**			
number	545	13	23	16	25	502	1124
%	48.5	1.2	2.0	1.4	2.2	44.7	100

Age information was captured for 729 of the 1912 contacts made by STAMMA support service users. Age data is not requested from users but is either recorded when the user gives it as part of their enquiry, or estimated by the STAMMA volunteer managing the contact, according to a number of age-brackets. All age data, provided or estimated, using these age brackets is summarised here.

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[15] p < .001, df = 1, Fisher's exact test, φ = 0.17, small effect size

[16] p < .001, df = 1, Fisher's exact test, Cramer's V = 0.10, small effect size

	18 & under	19-24	25-34	35-44	45-54	55-64	65+	Not recorded	Total
number	51	89	281	179	57	47	25	1183	1912
%	2.7%	4.7%	14.7%	9.4%	3.0%	2.5%	1.3%	61.9%	100

Users of STAMMA support services

The categories used to record the identity of people using STAMMA support services fall broadly into: people who stammer and their family members (parents and grandparents), professionals (speech and language therapists, teachers, and employers) and an 'other' category for all other contacts.

The distribution of the different users of STAMMA support changed significantly during COVID-19[17]. Family members increased contact rates during COVID-19: Parents of children who stammer accounted for 42% of contacts pre-COVID-19 and this rose to 51% of contacts during COVID-19. Contacts from grandparents also rose, although these made up a small number overall (0.7% of pre-COVID-19 contacts and 1.4% of COVID-19 contacts). Contacts from people who stammer themselves still accounted for a large proportion during COVID-19 (34.2%), but this

remained similar to pre-COVID-19 levels (38.2% of pre-COVID-19 contacts). The proportion of contacts made by all professional groups reduced during COVID-19, however.
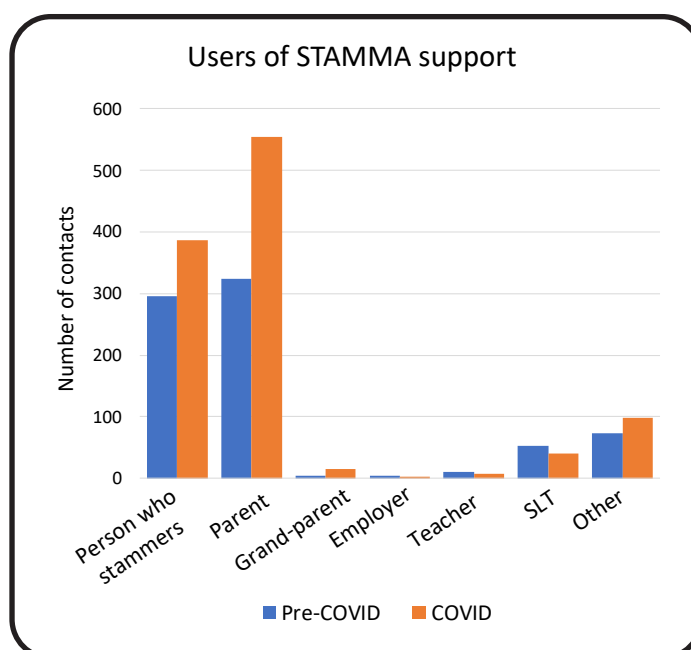
For parents contacting STAMMA, we grouped the children/young people about whom the contact concerned by school stage (pre-school, primary, secondary, 19+ years). The largest number of contacts overall were made for pre-school children, and the number of contacts

made by parents reduced with increasing age of the child/young person. During COVID-19, contacts overall increased, however the relative proportions of contacts about children of each school-stage did not change significantly, i.e., most contacts were still made about pre-

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[17] X²(6) = 26.07, p < .001, V = 0.12, medium effect size

school children during this time and the smallest number about young people aged 19+ years.

Parent contact with STAMMA
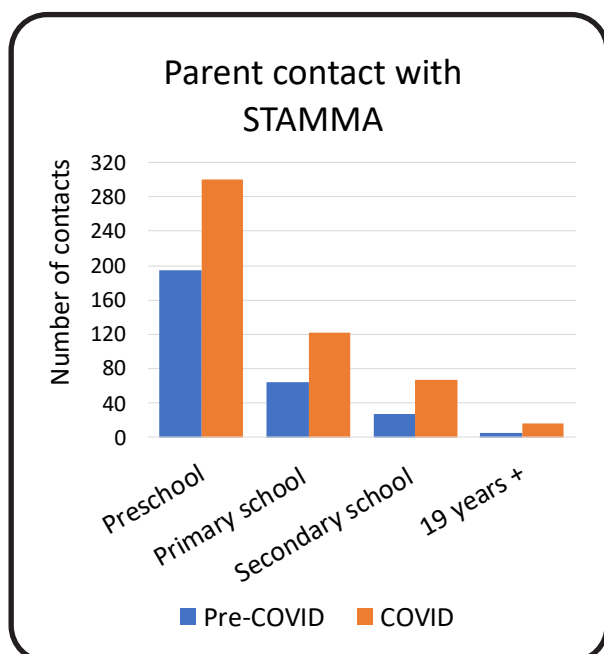
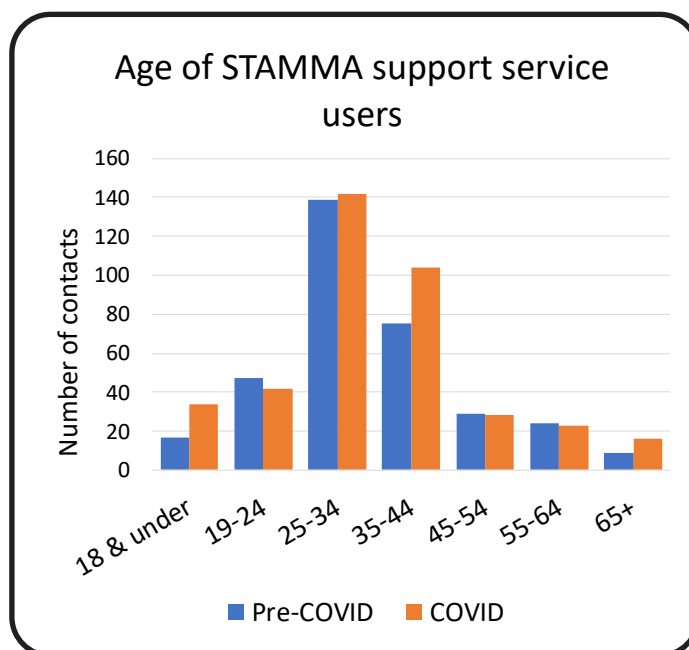The proportion of users falling into each estimated age bracket did not significantly change during COVID-19: the estimated age of most users fell in the 25-34 age bracket for both time periods[18].

Age of STAMMA support service users


Types of support requested

People contacted STAMMA services to request various types of support. Support service users may request support in more than one area, so the number of support requests is larger than the number of contacts made to STAMMA (2676 requests for support made in 1912 contacts to STAMMA services). The most frequent reasons for contact, both pre- and during COVID-19, related to SLT (37% of support requests), information requests (29%) and emotional support (17%).

Comparing requests made during COVID-19 to the pre-COVID-19 period, revealed

a significant change in the types of support requested[19]. Increases were seen in proportion of support requests made regarding education (from 4.7% to 7.2%), emotional support (from 14.3% to 18.7%), SLT (from 32.7% to 39.6%), and other types of support (from 1.2% to 8.2%). Increases were also seen in contacts made regarding benefits, although this remained a very small proportion (rising from 0.3% to 0.6% of support requests). Information support accounted for a smaller proportion of all contacts during COVID-19 (20.3%) than before (41.3%), although it remained one of the 3 most frequent support requests.

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[18] p = .075, Fisher's exact test

[19] $X^2(8) = 180.50$, $p < .001$, V = 0.26, large effect size

Type of support requested
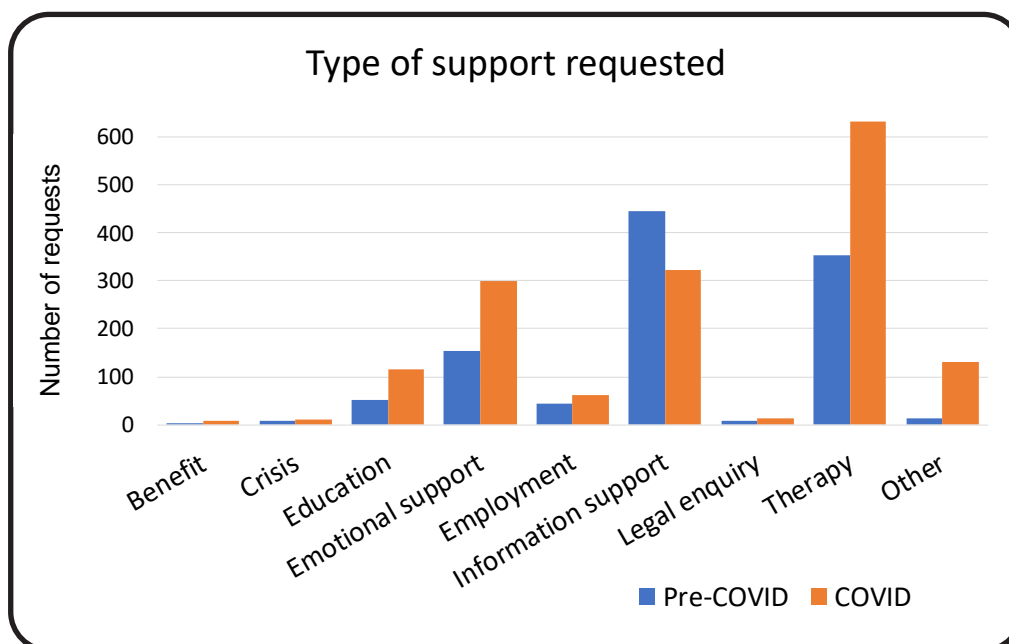
Outcomes of STAMMA support service contacts

2061 outcomes were logged for the 1912 contacts made to STAMMA across both periods. Both pre-COVID-19 and during COVID-19, the most frequent outcome was signposting to other organisations, resources, and websites etc. During both periods, signposting to SLT options (including NHS SLT services and Independent SLT services), and to STAMMA resources accounted for most outcomes logged. 144 logged outcomes (93 pre-COVID-19 and 51 during COVID-19) related to sending out information packs. However, as there were changes in the protocol of how information packs were used that occurred in the same time period as the pandemic but were not related to it, we excluded this outcome from our analyses.

There was a significant change in the proportions of different outcomes logged during COVID-19, compared to the preceding period[20].

Signposting occurred relatively less frequently during COVID-19 although absolute numbers increased (65.8% of pre-COVID-19 outcomes, n = 568; 56.9% of COVID-19 outcomes, n = 682). We also found an increase in other outcomes during COVID-19 (from 21.1% to 36.6% of outcomes logged). There was no change in the proportion of work-related advice provided (2.3% of outcomes logged at both time periods).

Outcomes of contacts

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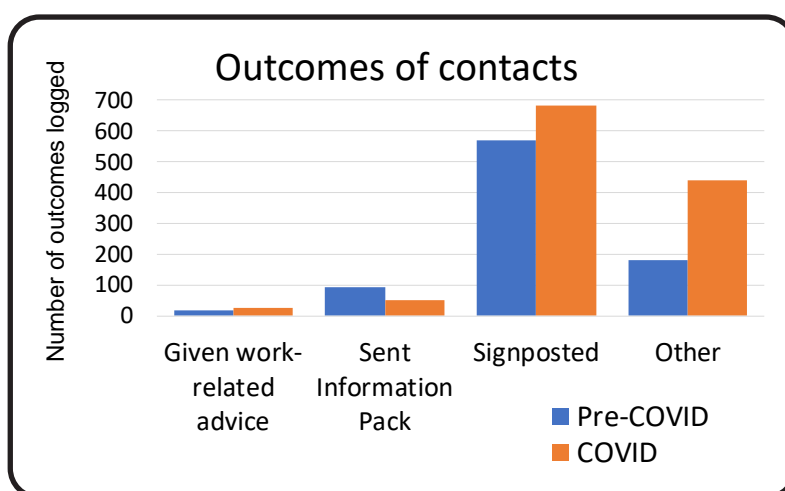
[20] $X^2(2) = 44.73$, $p < .001$, V = 0.15, small effect size

3. Speech and Language Therapy for people who stammer during the COVID-19 pandemic

What we did

We analysed data provided by the Royal College of Speech and Language Therapists from the Online Outcome Tool (ROOT).

RCSLT Online Outcome Tool
Therapy Outcome Measures

The data available on ROOT includes de-personalized demographic information on gender, age, and descriptors on communication condition using codes from International Statistical Classification of Diseases and Related Health Problems-10th Revision (data.gov.uk, 2015) . SLT services use the ROOT database to measure baselines and outcomes of therapy, based on the Therapy Outcome Measures for Rehabilitation Professionals (TOMs) which records outcomes in five domains (impairment, activity, participation, well-being, carer wellbeing) on an 11-point scale (from 0 to 5 in intervals of 0.5). All available data were shared with the BSLTRU team, where stuttering was listed as a primary or secondary impairment. These data were provided for SLT provision across the UK, including NHS, independent and third sector services. The COVID-19 period was defined as starting on 18/03/2020 (the date given in Chadd et al. (2021) that UK NHS providers were given the directive to postpone all non-urgent and elective activity) and ending on the latest available episode end-date (05/05/2021), a period of 59 weeks. An equivalent period was used to define the "pre-COVID-19" comparison data set (all episodes of care from 29/01/2019 to 17/03/2021). Data collected prior to 29/01/2019 were available but were not analysed here.

What we found

ROOT demographic information

Data from 415 SLT episodes were available in which stammering was listed as a diagnosis (primary or secondary). Of these, 105 episodes occurred in our time range of interest (pre-COVID-19 interval: 74; COVID-19 interval: 31).

In the COVID interval, the sample contained equal numbers of episodes of care for male and female service users. However, in the pre-COVID-19 interval 51 of the 74 episodes of care (69%) were provided for female service users.

Number	Male	Female	Not specified	Total
Pre-COVID	22	51	1	**74**
COVID	15	16	0	**31**
Total	**37**	**67**	**1**	**105**

Twelve SLT services used the ROOT to log outcomes for the 105 episodes included in the time range of interest. The majority of episodes were logged by services in Wales (57 of 105 episodes, or 54%) and England (46 of 105 episodes, or 44%). Most episodes were delivered by NHS service providers.

Number	Country				Total	Provider		Total
	England	**Northern Ireland**	**Scotland**	**Wales**		**NHS**	**Non-NHS**	
Pre-COVID	27	2	0	45	**74**	69	5	**74**
COVID	19	0	0	12	**31**	24	7	**31**
Total	**46**	**2**	**0**	**57**	**105**	**93**	**12**	**105**

There was a high proportion of missing data regarding the ages of service users who engaged in SLT during the time range of interest (67% of all logged episode contained no age information).

Number	Age range (years)						Total	Mean age (s.e.m.)
	<=7	**13-17**	**18-24**	**25+**	**8-12**	**missing**		
Pre-COVID-19	17	0	2	8	2	45	**74**	**19;00 (4;03)**
COVID-19	5	1	0	0	0	25	**31**	**5;06 (1;07)**
Total	**22**	**1**	**2**	**8**	**2**	**70**	**105**	**13;03 (1;02)**

Accessing SLT for stammering during the COVID-19 pandemic

There were significantly fewer episodes recorded in the COVID-19 compared to the pre-COVID-19 period[21] (pre-COVID-19 n = 74, COVID-19 n = 31), a 58% decrease in number of episodes of care.

We also compared the mean duration of intervention episodes in the pre-COVID-19 and COVID-19 time periods and found that intervention episodes were


Number of SLT episodes

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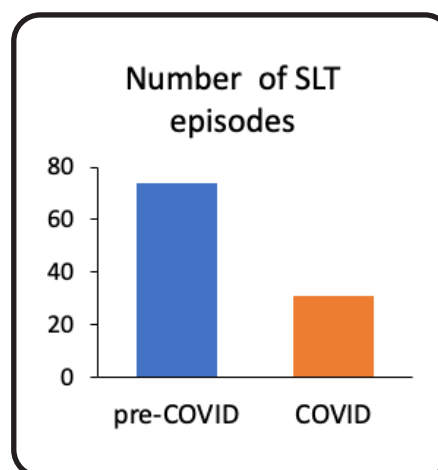
[21] $p < .001$, df =1, Fisher's exact test, $\varphi = 0.41$, medium effect size

significantly longer in the pre-COVID-19[22] (pre-COVID-19 mean (S.D.) = 197.47(164.94) days; COVID-19 mean (S.D.) = 107.35(86.43) days). This is a 46% decrease in episode duration during the pandemic, when defined by the overall time period over which care was delivered.

However, it should be noted that this measure does not take into consideration the number or frequency of sessions within each episode, as those data were not logged. In addition, a reduction in logged episodes does not necessarily reflect a reduction in care delivered. Alternatively, there may have been a change in ROOT recording behaviour during the pandemic, due to reduced

access to the system or increased demands on clinicians. It is not possible to differentiate between these alternatives using the available data.

Error bars show standard error of mean
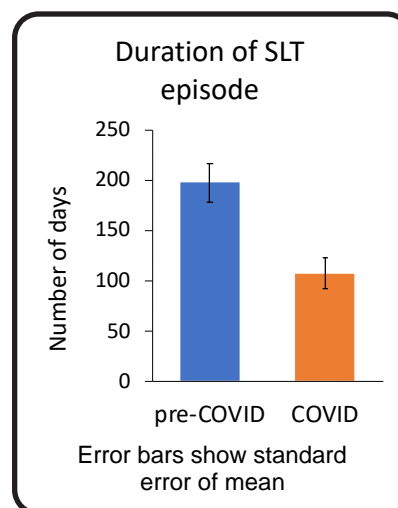
Outcomes of SLT for stammering during the COVID-19 pandemic

We compared average (mean) ROOT measures for each of the TOM domains, at the start and end of each SLT intervention episode, for the pre-COVID-19 and COVID-19 time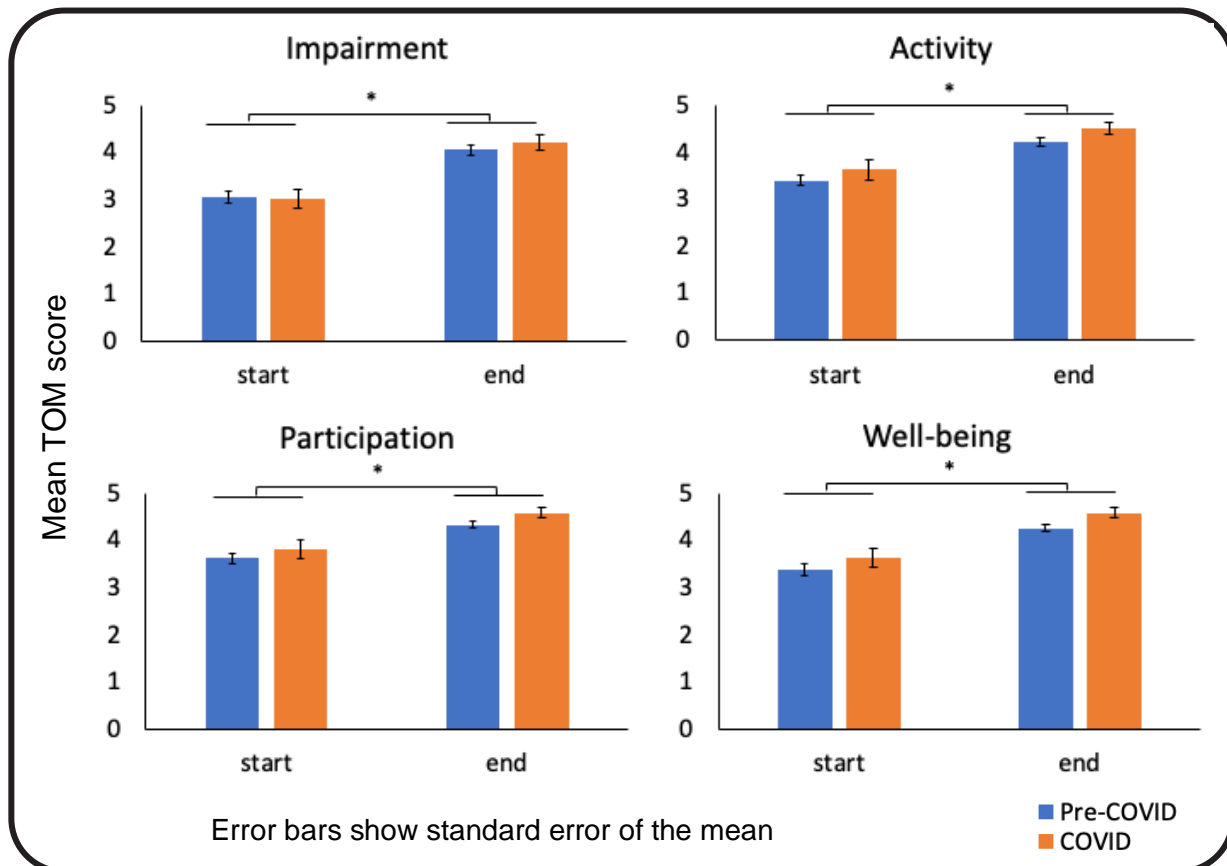 periods. The scores for impairment, activity, participation, and well-being domains were not significantly different for episodes of care completed during the COVID-19 pandemic compared to pre-COVID-19.

	mean start score (s.d.)		mean end score (s.d.)		mean change (s.d.)	
	Pre-COVID-19	COVID-19	Pre-COVID-19	COVID-19	Pre-COVID-19	COVID-19
Impairment	3.05 (1.00)	3.02 (1.06)	4.05 (0.83)	4.21 (0.96)	1.00	1.19
Activity	3.41(0.97)	3.63(1.15)	4.22(0.77)	4.50(0.74)	0.82	0.87
Participation	3.62(0.85)	3.82(1.08)	4.34(0.63)	4.60(0.69)	0.72	0.77
Well-being	3.38(1.04)	3.65(1.16)	4.26(0.69)	4.60(0.64)	0.88	0.95
Carer well-being	2.63(1.24)	3.71(1.05)	3.82(1.50)	4.75(0.40)	1.19	1.04

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[22] t (97.81) = 3.65, p < .001, d = 0.59, medium effect size.

This indicates that, overall, service users accessing SLT during the pandemic were not experiencing greater (or lesser)

challenges related to their stammering, compared to those attending before the pandemic.[23]

Error bars show standard error of the mean

■ Pre-COVID
■ COVID

ROOT outcomes scores were significantly higher than the baseline scores logged at the start of the episode of care, for impairment, activity, participation, and well-being domains[24].The size of this improvement was not significantly different for interventions completed during the COVID-19 pandemic compared to those completed pre-COVID-19. A change in TOM score of at least 0.5, in any domain, is considered a clinically

significant change (Moyse et al, 2020); on average, this was achieved for all domains of intervention completed in both the pre-COVID-19 and COVID-19 time periods. This indicates that intervention outcomes were not detrimentally affected during the COVID-19 pandemic (however, we consider a possible selection bias in clients conclusion section).

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[23]Mixed model ANOVAs were completed for each domain, with a within-subjects factor of intervention (start, end) and a between-groups factor of pandemic status (pre-COVID, during COVID). We found no significant main effect of pandemic status.

[24] There was a significant main effect of intervention, however, for all domains: Impairment, $F_{(1, 103)} = 129.92$; Activity, $F_{(1, 103)} = 80.43$; Participation, $F_{(1, 103)} = 75.21$; Well-being, $F_{(1, 103)} = 84.29$; all $p < .001$; all large effect sizes ($d = .42$ to $d = 1.47$).

Carer well-being scores were only included for a subset of all intervention episodes (this domain is only used when carers are involved in intervention), and scores were not always available for both the start and the end of intervention. Therefore, we conducted a complete-case analysis of carer well-being scores, including only episodes where no data were missing, which resulted in a small sample size. As for the analysis for the previous domains, a larger number of episodes were recorded in the pre-COVID-19 (n = 34) than the COVID-19 (n = 13) period. Carer well-being scores were higher overall (i.e., at baseline and outcome) during the COVID-19 pandemic compared to pre-COVID-19[25]), although the effect size was small. This indicates that the well-being of carers involved in SLT episodes during the pandemic, rather than being detrimentally affected, was in fact higher than that of carers involved in intervention pre-COVID-19. We consider possible explanation in the conclusion section. In addition, as for the other
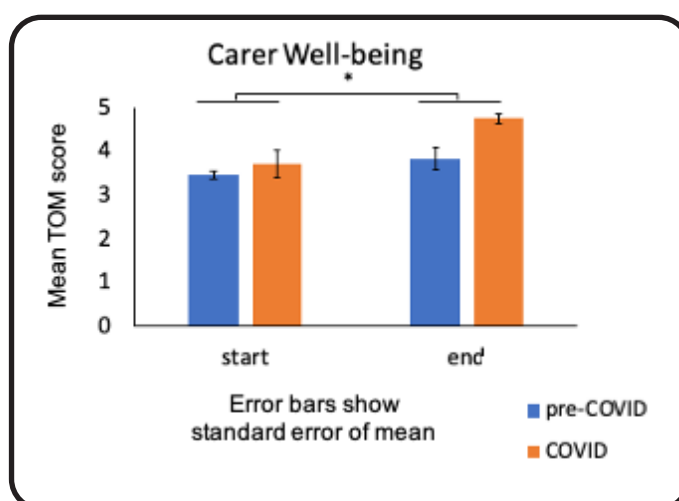
domains, carer well-being was scored significantly higher following intervention than at baseline[26]. The size of this improvement was not significantly different for interventions completed during the COVID-19 pandemic compared to those completed pre-COVID-19, which is consistent with the results for all other domains measured.

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[25] Mixed model ANOVA for carer well-being, with a within-subjects factor of intervention (baseline, outcome) and a between-subjects factor of pandemic status (pre-COVID-19, during COVID-19). Significant main effect of pandemic status, $F_{(1,103)} = 28.31$, $p < .001$, small effect size (d = .17).

[26] Significant main effect of intervention, $F_{(1,103)} = 7.51$, $p = .009$.

Summary and Recommendations

Changes in our interactions and communication have been necessary to manage the COVID-19 pandemic, such as using face masks and video calls. These changes, however, have increased anxiety and reduced participation for people who stammer.

The negative impact has been particularly marked for women and younger people. Our survey data did not allow an analysis of how experiences during COVID-19 may have differed for people who stammer from Black and minoritised ethnic groups. Evidence from other sources (e.g., Public Health England, 2021), however, shows that minoritised groups were generally more negatively affected during the pandemic.

People who stammer have identified several strategies to reduce barriers to participation. These include self-disclosure about stammering (telling others that you stammer), and making use of visual (e.g., raising a hand) and text (chat and direct message) functions during video calls.

Recommendation 1

Work and education settings should support reasonable adjustments for people who stammer when remote working, where this continues in the longer-term, to reduce the negative impacts on participation and mental health.

Recommendation 2

Support offered should take account of individual needs and recognize the impacts on specific groups such as women and younger people**.**

Recommendation 3

Increased awareness of good communication practice, particularly in remote working, will be helpful for people who stammer as well as people who do not. For example, turn-taking in video calls appears more difficult than in face-to-face interactions.

Considering the structure and 'etiquette' of video-call interactions, will likely benefit anyone who uses video-calls for work or social reasons.

Our survey showed that most adults who stammer have experienced an increase in stammering during the COVID-19 pandemic. In addition, both general anxiety around life circumstances and specific anxiety around stammering, have increased. Parents of children who stammer, particularly pre-school aged

children, have also contacted STAMMA support services at higher rates during the pandemic.

Specialist SLT services have expertise to work with people who stammer, providing individualized support related to all aspects of living with a stammer, including

the impact on mental health. STAMMA have seen an increase in enquiries about accessing SLT during the COVID-19 pandemic. However, our findings from the ROOT database suggest that contact with SLT services has reduced during this time.

Recommendation 4

Specialist SLT services have a key role to play in reducing the negative impact of the COVID-19 pandemic on people who stammer. Services require adequate funding and staffing to meet this need.

When planning future SLT provision for people who stammer, Clinical Commissioning Groups should consider the increased need related to the

- o well-known relationship between stammering and social anxiety
- o increased concern about early communication development in pre-school years.

Contacts to STAMMA support services increased by 43% during the COVID-19 pandemic. People making contact were particularly concerned about education, emotional support and accessing SLT. The data indicate that STAMMA support services have provided an essential point of contact for those needing support. The reduced opportunity for social contact, and the far-reaching impacts of social isolation, were also highlighted. STAMMA support services saw a higher number of contacts from people who stammer to 'just chat', i.e., to provide social contact and connection.

Changes in work, education and social settings that were implemented during COVID-19, such as the move towards increased use of digital technologies and remote working, are likely to remain in the long-term. These changes have particular

Recommendation 5

Charities like STAMMA are key in providing information and resources about stammering. They also represent a community, who offer invaluable peer support for people who stammer and expertise in raising awareness and educating others about stammering.

The need for support from STAMMA during and transitioning out of the pandemic is clear from the increased demand on their support services. Funding for this continued work is essential.

impacts on people who stammer. Awareness-raising and education about stammering for employers, educators and the general public will be important to ensure that people who stammer do not experience increased barriers to participation. STAMMA are ideally placed to contribute to this work.

Recommendation 6

A more comprehensive examination of access to SLT during COVID-19 (for example, an audit of stammering services referrals and attendance) is recommended.

Identification of increased inequity of access to SLT, and consideration of the factors driving this trend, will be important to ensure that all people who stammer are able to receive the necessary support to mitigate the effects of living through the pandemic.

Data provided from the ROOT database indicated that access to SLT was reduced during the pandemic. However, when SLT intervention was provided, it was as effective as intervention offered before the pandemic.
It is difficult to make strong conclusions from this small data set. There are some indications, however, of inequity of access to SLT during the pandemic which should be considered. For example, the smaller number of service users accessing SLT had similar levels of need (measured across 'Therapy Outcome Measure' domains) to those accessing SLT before the pandemic. However, our survey data, as well as other studies, indicate that difficulties have increased for people with communication disabilities during the pandemic. This suggests that SLT may not have been accessed by the people with the greatest need. In addition, when carers were involved in SLT sessions, a measure of their well-being was taken. Well-being was higher for the carers involved in SLT during the pandemic, than for those involved in the preceding time-period. This may reflect a difficulty for carers with poor well-being to prioritise attending SLT sessions during the pandemic.

STAMMA data also indicated that professionals (including employers, teachers and speech and language therapists) have contacted STAMMA less for support during the pandemic. Again, it is not possible to draw strong conclusions, but this could reflect overall pressures during COVID-19 reducing the perceived priority of stammering support.

The increased awareness in the general public of communication, and of mental health, during COVID-19 has been one beneficial consequence of the pandemic. Increasing awareness and acceptance plays a big part in reducing the stigma and societal barriers faced by people who stammer. In our survey, people who stammer identified awareness-raising and reducing stigma around stammering as actions they considered important for STAMMA and SLT services to work on.

Recommendation 7

The period of transition out of the pandemic is an important opportunity to capitalise on the increased general awareness of the impacts of communication barriers, anxiety, and social isolation.

Stakeholders (SLT services, STAMMA and other charities working with people who stammer, employers, educational institutions, researchers etc) can work in partnership to further promote awareness and understanding of stammering.

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North Bristol
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Contact Us

If you would like to get in touch to discuss the project or to provide feedback, please email jennifer.chesters@nbt.nhs.uk.

We will share further work from this project on our website: https://www.nbt.nhs.uk/bristol-speech-language-therapy-research-unit/bsltru-research/impact-covid-19-people-who-stammer

and our twitter account:

@Bristol_SLTRU

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Appendix: Survey format

Impact of Covid-19 on Stammering

Please answer the following questions about your experiences of stammering since the beginning of COVID-19 restrictions in March 2020. There are 32 questions which take 5 – 10 minutes to answer in total. We have also included some optional text boxes for additional information about your personal experiences. Any information you would like to provide there will be really valuable for us.

Information about you

1. I am
   - ☐ Male
   - ☐ Female
   - ☐ Non-binary
   - ☐ Prefer not to say

2. I am: _____ years old

3. I am:
   - ☐ In paid work
   - ☐ In unpaid work
   - ☐ Not working
   - ☐ In education

4. The first part of my postcode is:_____

5. My ethnic group is:

   Choose one option that best describes your ethnic group or background

   White

   - ☐ English/Welsh/Scottish/Northern Irish/British
   - ☐ Irish
   - ☐ Gypsy or Irish Traveller
   - ☐ Any other White background, please describe

   Mixed/Multiple ethnic groups

   - ☐ White and Black Caribbean

- ☐ White and Black African
- ☐ White and Asian
- ☐ Any other Mixed/Multiple ethnic background, please describe

[ ]

Asian/Asian British

- ☐ Indian
- ☐ Pakistani
- ☐ Bangladeshi
- ☐ Chinese
- ☐ Any other Asian background, please describe

[ ]

Black/ African/Caribbean/Black British

- ☐ African
- ☐ Caribbean
- ☐ Any other Black/African/Caribbean background, please describe

[ ]

Other ethnic group

- ☐ Arab
- ☐ Any other ethnic group, please describe:

[ ]

6. I started stammering _____ years ago

7. I tend to:
   - ☐ Stammer openly (overt stammering)
   - ☐ Hide my stammer (covert/interiorised stammering)

Information about your experiences since COVID-19 pandemic started

8. Overall, since COVID-19 started my stammering has:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed
   - ☐ Decreased a little
   - ☐ Decreased a lot

[OPTIONAL FIELD]

Please give details here on key factors that have influenced your stammer

9. Since COVID-19 started my general anxiety levels (e.g., worry about health, family, job security, finances) have:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed
   - ☐ Decreased a little
   - ☐ Decreased a lot

10. Since COVID-19 started my anxiety levels about stammering have:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed
   - ☐ Decreased a little
   - ☐ Decreased a lot

[OPTIONAL FIELD]

Please tell us here why you think your anxiety levels have changed

11. Some people avoid speaking in challenging situations in case they stammer.

   Since COVID-19 started it has been:

   - ☐ A lot harder for me to avoid speaking
   - ☐ A little harder for me to avoid speaking
   - ☐ No different for me to avoid speaking
   - ☐ A little easier for me to avoid speaking
   - ☐ A lot easier for me to avoid speaking
   - ☐ I don't tend to avoid speaking

[OPTIONAL FIELD]

Please tell us about your experiences of avoiding stammering

12. Since COVID-19 started, the time I spend speaking on video conferencing platforms (e.g., Zoom, Teams) has:
    ☐ Increased a lot
    ☐ Increased a little
    ☐ Not changed
    ☐ Decreased a little
    ☐ Decreased a lot

13. Compared to face-to face situations, using video-conferencing platforms to communicate is:
    ☐ a lot harder
    ☐ a little harder
    ☐ No different
    ☐ A little easier
    ☐ A lot easier

14. Compared to face-to face situations, when I speak on video-conferencing platforms my anxiety levels:
    ☐ Increase a lot
    ☐ Increase a little
    ☐ Are the same
    ☐ Decrease a little
    ☐ Decrease a lot

15. Compared to face-to-face situations, my participation in discussions on video-conferencing platforms:
    ☐ Increases a lot
    ☐ Increases a little
    ☐ Is similar
    ☐ Decreases a little
    ☐ Decreases a lot

16. For me speaking on video-conferencing platforms:
    ☐ Has many advantages
    ☐ Has a few advantages

- ☐ Makes little difference
- ☐ Has a few disadvantages
- ☐ Has many disadvantages

[OPTIONAL FIELD]

Please tell us here about the advantages of communicating on video conferencing platforms

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[OPTIONAL FIELD]

Please tell us here about the disadvantages of communicating on video conferencing platforms

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17. What has helped you communicate on video-conferencing platforms?

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18. Since COVID-19 started, the time I spend speaking in face-to-face situations has:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed
   - ☐ Decreased a little
   - ☐ Decreased a lot

19. Since COVID-19 started, the difficulties I have speaking face-to-face have:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed
   - ☐ Decreased a little
   - ☐ Decreased a lot

20. Since COVID-19 started, when speaking face to face, my anxiety levels have:
   - ☐ Increased a lot
   - ☐ Increased a little
   - ☐ Not changed

- ☐ Decreased a little
- ☐ Decreased a lot

21. For me, communicating when wearing a face mask is:
    - ☐ Much more difficult
    - ☐ A little more difficult
    - ☐ No different
    - ☐ A little easier
    - ☐ Much easier

22. When speaking with a face mask, my anxiety levels:
    - ☐ Increase a lot
    - ☐ Increase a little
    - ☐ Are the same as without a mask
    - ☐ Decrease a little
    - ☐ Decrease a lot

[OPTIONAL FIELD]

Please tell us about the impact of wearing a face mask on your stammering

23. What has helped you when wearing a mask?

24. Since COVID-19 started, the time I spend speaking on the phone has:
    - ☐ Increased a lot
    - ☐ Increased a little
    - ☐ Not changed
    - ☐ Decreased a little
    - ☐ Decreased a lot

25. Since COVID-19 started, the difficulties I have speaking on the phone have:
    ☐ Increased a lot
    ☐ Increased a little
    ☐ Not changed
    ☐ Decreased a little
    ☐ Decreased a lot

26. Since COVID-19 started, when speaking on the phone, my anxiety levels have:
    ☐ Increased a lot
    ☐ Increased a little
    ☐ Not changed
    ☐ Decreased a little
    ☐ Decreased a lot

[OPTIONAL FIELD]

Please can tell us about changes to your experience of using the phone since COVID-19 started

27. Have you used any of the following strategies to help communication?
    ☐ Self-advertisement (explaining you have a stammer)
    ☐ A transparent mask so that people can see if you are stammering
    ☐ A card to show people that explains you stammer
    ☐ A mask that lets people know you stammer
    ☐ Something else – please give details below

How did the strategies help?

28. Many Speech and Language Therapy services have moved online to virtual platforms. This would make me:
    ☐ A lot more likely to access help from a Speech and Language Therapist
    ☐ A little more likely to access help from a Speech and Language Therapist
    ☐ Make no difference to whether I access help from a Speech and Language Therapist
    ☐ A little less likely to access help from a Speech and Language Therapist
    ☐ A lot less likely to access help from a Speech and Language Therapist

[OPTIONAL FIELD]

Please tell us about your experience of accessing Speech and Language Therapy since COVID-19 started

29. Please tell us more about any positives you have experienced as someone who stammers, since COVID-19 started:

30. Please tell us more about any challenges you have experienced as someone who stammers since COVID-19 started:

31. Please tell us the things that have helped you during this time, that you would like to share with others:

32. Please tell us more about the support you would find most useful from Speech and Language Therapy services or organisations such as STAMMA:

Thank you very much for taking the time to answer these questions. We hope to use the findings to support people who stammer and increase awareness of the issues faced by people who stammer.