I’m going to describe therapy carried out by myself and my students Bhavini Carpenter and Isabelle Young at Australian Catholic University’s Clinic last year. Therapy was inspired by an idea from Lucy Dipper which was to teach a client with auditory comprehension difficulties to focus on key words in spoken instructions.
P self referred to the clinic aged 61. He had fluent aphasia following a stroke 5 years earlier. He had no other physical or medical problems and he was very active and eager to improve. He was also however, clearly very anxious about his comprehension difficulties, and together we identified some key areas where these impacted his life.

Goals for P?

- To improve P’s understanding of:
  - Public transport announcements
  - Instructions from waiters at cafes/restaurants
  - The GP’s receptionist on the phone when making appointments
From P’s description and his intense concentration on lip movements when listening, we suspected he had word sound deafness and this was confirmed by assessment. So OK we knew what was wrong but what therapy should we do? There’s a very small evidence base to guide us as clinicians here, but I was aware of a therapy study by Morris and colleagues at Newcastle, and that one of the few things we had in our brand new clinic cupboard were the Newcastle Aphasia Therapy Resources! So these were our starting point, but a challenge remained in how to make Tx functional so that hopefully we would get carryover of improved speech discrimination skills to real life communication.
We developed a Tx program which targeted functionally relevant words and phrases. Exercises simulated the situations P had identified as difficult and followed a hierarchy carefully controlled to gradually increase the difficulty of the therapy task. The first stage of treatment used the Newcastle resources and was a simple spoken word picture matching exercise. Therapy exercises were carried out using Powerpoint Slides which were emailed to the client for home practice. The slides had spoken and written cues embedded plus feedback to P on whether his response was right or wrong. These features were animated to emulate the procedure followed in face-to-face sessions. The first face to face sessions allowed lip reading and then this was prevented as P improved. Next difficulty was added by placing the target word in a carrier phrase such as “Show me the bill” and again at first lip reading was allowed and then prevented.
Stage 2 of Tx focused P on listening for the key word in functionally relevant phrases. Here we can see a slide addressing P’s difficulty understanding public transport announcements. It uses written cues to harness P’s superior reading ability to scaffold his auditory comprehension, whilst photographs bootstrap his relatively unimpaired semantic system. At this stage lip reading was allowed in face-to-face sessions.
Stage 3 therapy increased difficulty by preventing lip reading but written and photographic cues were still available.
At stage 4 the written cue was removed forcing P to rely more and more on correctly processing the auditory signal to supply the correct response.
Once P could reliably identify the key word in these tasks we increased difficulty by introducing background noise, and stages 1-4 were repeated with background noise at 40db and then 60db. The final stages of treatment aimed to enable P to use his improved auditory comprehension skills in real life. So the students created scripts and props to simulate ordering in a restaurant and making a doctor’s appointment. They increased difficulty by bringing their peers into sessions with whose voices P was unfamiliar, and phoning him from another room in the clinic. Finally they went with P to order coffee from the university’s cafes.
Did Tx work? Well P’s scores on the CAT spoken sentence comprehension test improved from 15/32 to 23/32 post Tx, and on the PALPA Auditory Synonym Judgement task from 6/60 to 41/60.

**Functional** improvements noted during treatment included reduced requests for repetition, increased speed of response and increased naturalness of interaction whilst the client and his family also reported functional improvements in his understanding particularly in relation to treated words and phrases. P himself said: “I know
why therapy worked – because now I listen for the key words in sentences”
Why did therapy work? Possibly Important factors:

- Using **VERY personally relevant** materials and scenarios
- Use of the **evidence-base** to identify the variables which would create a hierarchy of difficulty in treatment
  - phonetically dissimilar -> similar therapy stimuli;
  - presence -> absence of lip reading;
  - absence -> presence of (louder & louder) background noise;
  - familiar -> unfamiliar voices;
  - hierarchy of functionally relevant scenarios -> practice in real life
- Use of **computer based exercises** which P could take home and practice

So why did we see changes in functional comprehension which are rarely reported? Possibly Important factors were:

Using **VERY personally relevant** materials and scenarios

Use of the **evidence-base** to identify the variables which would create a hierarchy of difficulty in treatment

Use of **computer based exercises** which P could take home and practice
However the study also begs lots of questions such as was treatment effective because P had a \textit{milder auditory discrimination deficit}? because P had \textit{relatively good written word comprehension and/or semantics} And was the \textit{amount of therapy} crucial?

Questions: Was treatment effective because . . .

- P had a \textit{milder auditory discrimination deficit}?
- P had \textit{relatively good written word comprehension and/or semantics}?
- of the \textit{amount of therapy} (face-to-face and computer-based homework)?

Thank you to P
And to my amazing students
Bhavini Carpenter & Isabelle Young