

# A New Intervention for Auditory Comprehension Difficulties in Chronic Post-Stroke Aphasia

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## Background

- People with post-stroke aphasia often suffer from auditory comprehension difficulties which affect their quality of life.
- Few available interventions target auditory comprehension difficulties at narrative level, though there is evidence at sentence level of improved outcomes when auditory input is combined with simultaneous reading (e.g. Brown et al., 2019). Studies in the field of foreign language learning have also shown that subtitled videos aid vocabulary acquisition, decoding, and understanding narratives (Garza, 1991; Hayati & Mohmedi, 2011; Van Lommel et al., 2006).
- This pilot study explored the effectiveness of a novel intervention which uses a multimodal approach of simultaneous spoken and written input involving watching videos with subtitles to address auditory comprehension difficulties at a narrative level.

## Methods

- Four people with auditory comprehension difficulties resulting from chronic post-stroke aphasia were recruited from a university-based community clinic (see Table 1).

Table 1. Participant demographic information

Pt	Gender	Age	WAB score AQ	Years since onset	Spoken aud discrim (PALPA 2)	Written aud discrim (PALPA 3)	Selective attention (TEA)	Working memory span
AS	M	65	54.6	16	30/36	51/72	4/10	4 digits
TW	M	61	46.6	15	28/36	60/72	1/10	0
BP	F	73	35.9	5	33/36	63/72	1/10	2 digits
NB	F	63	50	5	35/36	66/72	0/10	0

- Outcome measures assessed word, sentence, and narrative level auditory comprehension (see Fig 1).
- Weighted Statistics analyses (WEST; Howard et al., 2015) were used to establish whether there was any significant improvement in scores on language assessments after therapy.
- Qualitative measures exploring therapy acceptability and support needed were also included.

## Intervention

- Remote therapy involved watching subtitled videos and completing associated activities intended to aid engagement with and understanding of the video content.
- Participants were asked to watch 1-2 videos per day over three weeks.
- **Videos:** 5-6 minute clips, selected based on their slow narration speed, absence of the speaker from the screen, and factual content (e.g. from the BBC Planet Earth series, as in Fig 2).
- **Activities:** included True or False, Sentence completion, e.g.



Figure 2. Recreated screenshot from therapy video

Polyps are \_\_\_\_\_:  
a. Tiny colonial animals with tentacles.  
b. Green, microscopic plants.



Figure 3. Study design

## Results

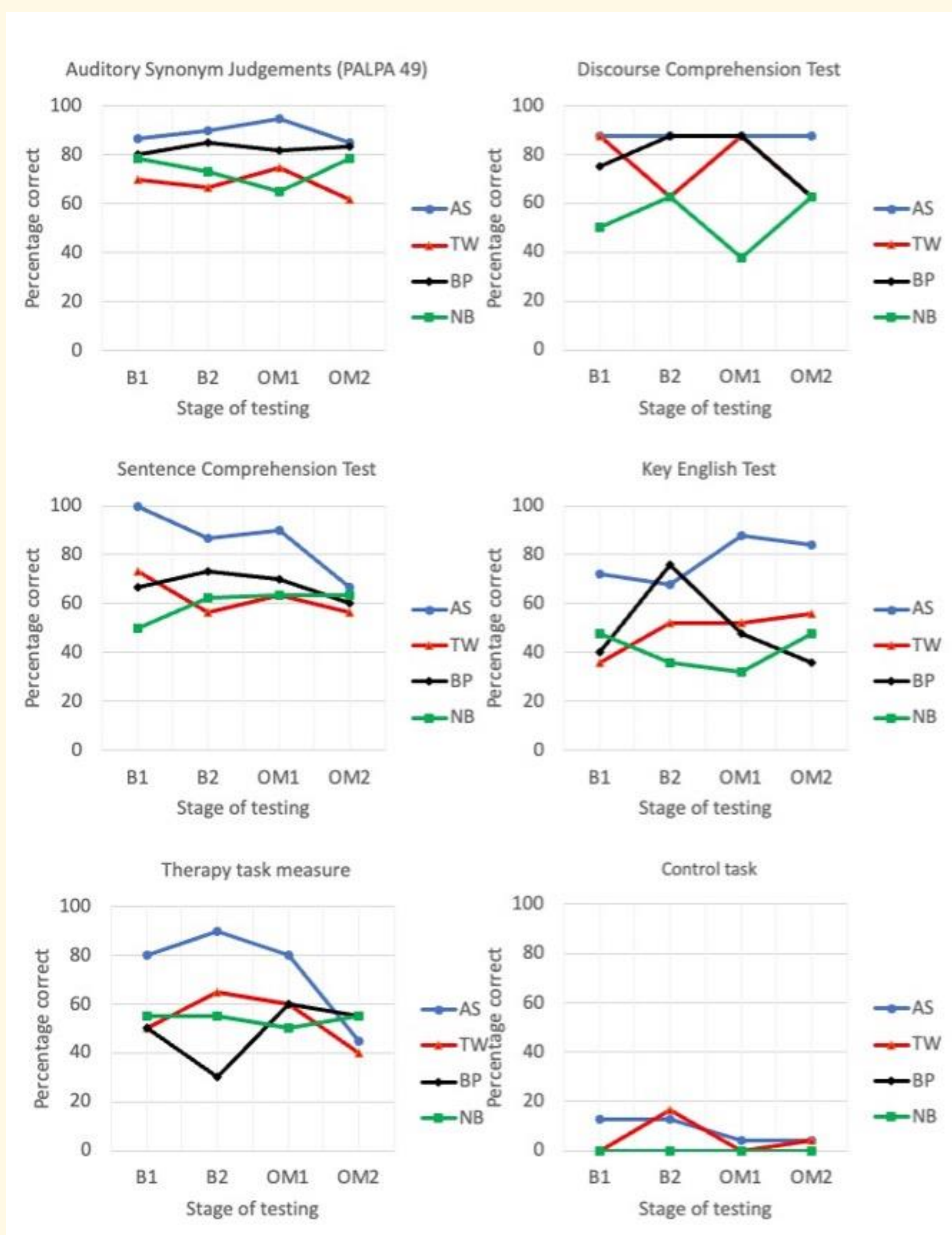


Figure 1. Scores at different points of testing: baseline 1 (B1), baseline 2 (B2), outcome measure straight after therapy (OM1), and maintenance measure 5 weeks after therapy (OM2) are shown. Different coloured lines refer to different participant (see legend on the right side of each graph).

- Participants' scores varied across the two baseline measures.
- Participants completed all aspects of the study and needed minimal support from researcher with technical difficulties.
- Within-participant assessment scores were first visually analysed: most of the tests did not show any improvement (see fig 2).
- Four assessment scores were further statistically analysed with WEST-ROC and WEST-Trend which indicated that:
  - BP showed significant improvement on the therapy task measure.
  - AS's improvement on conversation level comprehension approached significance (Key English Test).

## Discussion

- This novel intervention for auditory comprehension difficulties proved to be acceptable for people with post-stroke aphasia as they required minimal support to carry out the tasks required.
- The therapy shows potential benefit on the conversation level of understanding and treated task measure.
- Further research is needed with more participants and more sensitive measurements of change to minimise the effects variation in scores on the assessments. A variety of times post-stroke could also be compared.

## References

- Brown, J. A., Wallace, S. E., Knollman-Porter, K., & Hux, K. (2019). Comprehension of single versus combined modality information by people with aphasia. *American Journal of Speech-Language Pathology*, 28(1S), 278-292.
- Garza, T. J. (1991). Evaluating the use of captioned video materials in advanced foreign language learning. *Foreign Language Annals*, 24(3), 239-258.
- Hayati, A., & Mohmedi, F. (2011). The effect of films with and without subtitles on listening comprehension of EFL learners. *British Journal of Educational Technology*, 42(1), 181-192.
- Howard, D., Best, W., & Nickels, L. (2015). Optimising the design of intervention studies: critiques and ways forward. *Aphasiology*, 29(5), 526-562.
- Van Lommel, S., Laenen, A., & d'Ydewalle, G. (2006). Foreign-grammar acquisition while watching subtitled television programmes. *British Journal of Educational Psychology*, 76(2), 243-258.