

University of Arizona Aphasia Research Project

Phonological Treatment Protocol

Sound-Letter/Letter-Sound Correspondence

Establish a set of “key words” that begin with the initial phonemes to be trained. Patients should be able to write all of the key words. It is helpful if they can also say the key words, although not necessary for moving forward in the protocol. In the Aphasia Lab, we use the Copy and Recall Treatment (CART) to train a standard set of words for 20 consonants and 12 vowel sounds (see below). Individualized key words that are relevant to a particular patient may also be used.

Consonants are trained in a multiple baseline design using four sets of 5 consonants. Criterion is met when the participant is able to correctly write *and* say each set of phonemes with 80% accuracy over 2 sessions (e.g. 4/5 correct on both sound-to-letter and letter-to-sound probes). The only exception to this rule is for patients with severely impaired speech production (e.g. severe apraxia of speech). In this case, meeting criteria on the sound-to-letter condition alone may be sufficient.

Therapy Procedure:

A. Implement a cueing hierarchy to train targeted graphemes/phonemes.

1. Write the letter that makes the sound /p/
 - If correct, move on
 - If incorrect, proceed to step 2.
2. Think of your key word for /p/. Try to write your key word.
 - If correct, say, “Yes, pie is your keyword. Pie starts with /p/. Underline the /p/ sound in pie.”
 - If incorrect, go to step 3.
3. Show picture and say, “Your key word for /p/ is pie. Write pie. Now underline the /p/ sound in pie.”
 - If incorrect, go to step 4.
4. Provide model for key word. “Your key word is pie. Copy pie. Now underline the /p/ in pie.”

Other activities that can be done during phonological training sessions include:

1. Matching sounds to letters/words in limited field (e.g. laying out pictures of all of the key words and having subject point to the key word that goes with /p/, etc.)
2. Practicing segmenting the initial and/or final sound in words. For example, “Listen to the first sound in the words I say, and try to write the letter that goes with the sound. What is the first sound in the word *pen*?” Tie these activities back to key words as much as necessary. “Listen to these words, pen-pie. They have the same first sound. What is that first sound? Can you write it?”

3. Having the patient attempt to think of other words that begin with a target phoneme/grapheme; or, if this is too difficult, list several words that begin with the target sound and have patient read or repeat each one.

Homework:

If possible, provide a videotape/DVD for daily homework. A general script for sound-letter/letter-sound homework is used; however, it has become apparent that slight modifications may be needed for each participant. For example, those who have more difficulty with letter-to-sound than sound-to-letter may need more repetition practice built into homework.

A “talking” photo album can also be used for homework. On the first page, write a number and record a phoneme. Encourage the patient to repeat the phoneme and attempt to write the corresponding grapheme. On the next page, have the grapheme written out for patient to self check, and record the key word.

A note about VOWELS:

Following establishment of consonants, vowels are trained in 2 sets of 6. Baseline probes for vowels can be completed during training of consonants.

Vowel training follows the same procedure as consonant training. However, in the standard set of key words, there are two key words for each vowel, as some vowels have more than one “typical” corresponding grapheme (e.g. ee and ea for /i/). Also, because vowels are in the medial position of the original key words, it has been helpful to come up with vowel-initial words as additional key words, especially if these words are meaningful to the patient (e.g. names). These additional key words can be incorporated into the video homework. Also, the concept of “long” and “short” vowel sounds has been helpful to some patients in trying to learn vowel sounds.

Nonwords are used to probe vowel letter to sound correspondence in order to provide some context for the vowels.

Relevant Publication:

Beeson, P.M., Rising, K., Kim, E. & Rapcsak, S.Z. (2010). A treatment sequence for phonological alexia/agraphia. *Journal of Speech, Language, Hearing Research* 53, 450-468.

Aphasia Research Project Key words by Phoneme:

Consonants:

Set 1

r rug
t top
s safe
n net
l leaf

Set 2

k cake
d dog
m moon
f fire
p pie

Set 3

b book
sh ship
v van
g goat
z zoo

Set 4

h hat
th three
w web
ch chin
j judge

Vowels:

Set 5

Trained Words

/i/ leaf, three
/E/ web, net
/e/ cake, safe
/æ/ hat, van
/aI/ fire, pie
/I/ ship, chin

Possible vowel initial words

eat, eel
elk, Ed
ape
apple
ice
it, inch

Set 6

Trained Words

/o/ goat, bone
/a/ top, dog
/^/ rug, judge

Possible vowel initial words

oat, open
on, off
up

/u/ moon, zoo
/U/ foot, book
/au/ mouth, cow

ooze

out, owl