

# Supplemental material

## Appendix A

Demographics and profile for individual participants in Semantic Feature Analysis treatment group. Adapted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Adapted with permission.

ID	Participant	Age (years)	Sex	Education level (years)	Duration post onset (years)	Handedness	Non-verbal Reasoning		Semantic Processing CAT Memory t-score	Auditory Comprehension CAT		Phonologic Processing SAPA		Reading Comprehension CAT		Writing CAT		Verbal Short Term Memory	
							Ravens (out of 36)	Lexical Retrieval BNT (out of 60)		Comprehension of Spoken Language t-score	SAPA (out of 144)	Verbs (out of 25)	Comprehension of Written Language t-score	Production of Written Language t-score	TALSA Digit Span (out of 7)	TALSA Word Span (out of 7)			
SF01	29	72	M	20	2	R	27	11	62	45	59	5	46	47	1.05	2			
SF02	30	69	M	19	8.5	L	35	28	62	50	61	3.33	54	51	2.2	1.2			
SF03	31	38	F	12	3.42	R	36	38	62	48	100	16.33	49	57	3	3.05			
SF04	32	72	F	16	2.25	R	35	46	54	56	106	21.5	62	57	4.15	3.1			
SF05	33	57	M	10	0.92	R	25	4	54	47	49	2	44	46	2	1.15			
SF06	34	44	F	16	0.75	R	36	50	62	57	112	19.33	60	55	4.1	3.1			
SF07	35	45	M	14	1	R	34	7	41	52	73	2.67	56	52	3.15	2.05			
SF08	36	91	F	18	0.67	R	*	3	62	39	32	3.33	49	44	1.05	1.15			
SF09	37	69	M	13	10.33	R	32	30	54	56	74	14.67	52	50	4	3.05			
SF10	38	63	M	12	3.17	L	28	17	54	58	70	13.33	56	53	3	2.2			
SF11	39	70	F	13	3.58	R	34	2	39	43	44	3	45	47	*	1.2			
SF12	40	59	F	16	9.25	R	35	14	39	45	90	6.33	49	50	2.15	2.1			
SF13	41	65	M	13	0.83	R	25	50	54	58	92	18	54	59	5.1	3.05			
SF14	42	56	F	12	2.08	R	27	46	50	50	80	18	52	48	2	2			
SF15	43	77	F	16	14.75	R	35	11	62	50	69	9.33	57	59	2.05	1.2			
SF16	44	74	M	16	2.75	R	24	1	41	38	36	0	38	44	2	1.05			
SF17	45	64	M	19	2.17	R	28	38	50	52	84	17.67	58	50	2.1	1.2			
SF18	46	55	M	15	1.58	R	35	54	50	63	118	22.67	63	60	6.05	4.2			
SF19	47	75	F	12	14.08	R	22	1	50	52	44	0.5	56	52	3	2			
SF20	48	77	M	18	11	R	34	1	54	47	53	0	51	49	*	2.1			
SF21	49	55	M	16	1.5	R	32	47	62	57	111	19.33	60	62	*	*			
SF22	50	66	M	16	1	R	33	52	62	56	99	17.33	57	55	5.05	4			
SF23	51	68	F	18	1.83	R	22	11	16	41	58	4.5	45	48	1.1	1.05			
SF24	52	62	M	18	6.17	R	25	17	16	39	100	10.67	50	49	1.05	1			
SF25	53	58	M	12	1.83	R	*	28	54	56	87	19.67	50	58	*	*			
SF26	55	79	F	14	9.25	R	19	47	35	55	96	21.33	59	52	4.1	3.15			
SF27	56	75	M	20	0.5	R	31	36	54	46	102	17	52	62	3.2	2.15			
SF28	57	47	M	11	1.83	R	36	7	62	48	69	2.67	54	54	4.1	2.15			
SF29	58	55	M	16	1.17	R	34	52	62	65	117	19	65	69	6.2	5			
<b>AVE</b>		<b>64.0</b>		<b>15.2</b>	<b>4.1</b>		<b>30.3</b>	<b>25.8</b>	<b>51.0</b>	<b>50.7</b>	<b>78.8</b>	<b>11.3</b>	<b>53.2</b>	<b>53.1</b>	<b>3.1</b>	<b>2.2</b>			
<b>SD</b>		<b>12.0</b>		<b>2.8</b>	<b>4.3</b>		<b>5.2</b>	<b>19.4</b>	<b>12.6</b>	<b>7.1</b>	<b>25.3</b>	<b>7.9</b>	<b>6.3</b>	<b>6.0</b>	<b>1.5</b>	<b>1.1</b>			

M = male; F = female; BNT = Boston Naming Test; CAT Memory = Comprehensive Aphasia Test Memory Composite Score (Semantic Memory + Recognition Memory); SAPA = Standardized Assessment of Phonology in Aphasia; TALSA = Temple Assessment of Language and Short Term Memory in Aphasia; AVE = average; \* indicates missing data

## Appendix B

Demographics and profile for individual participants in Phonomotor treatment group. Adapted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Adapted with permission.

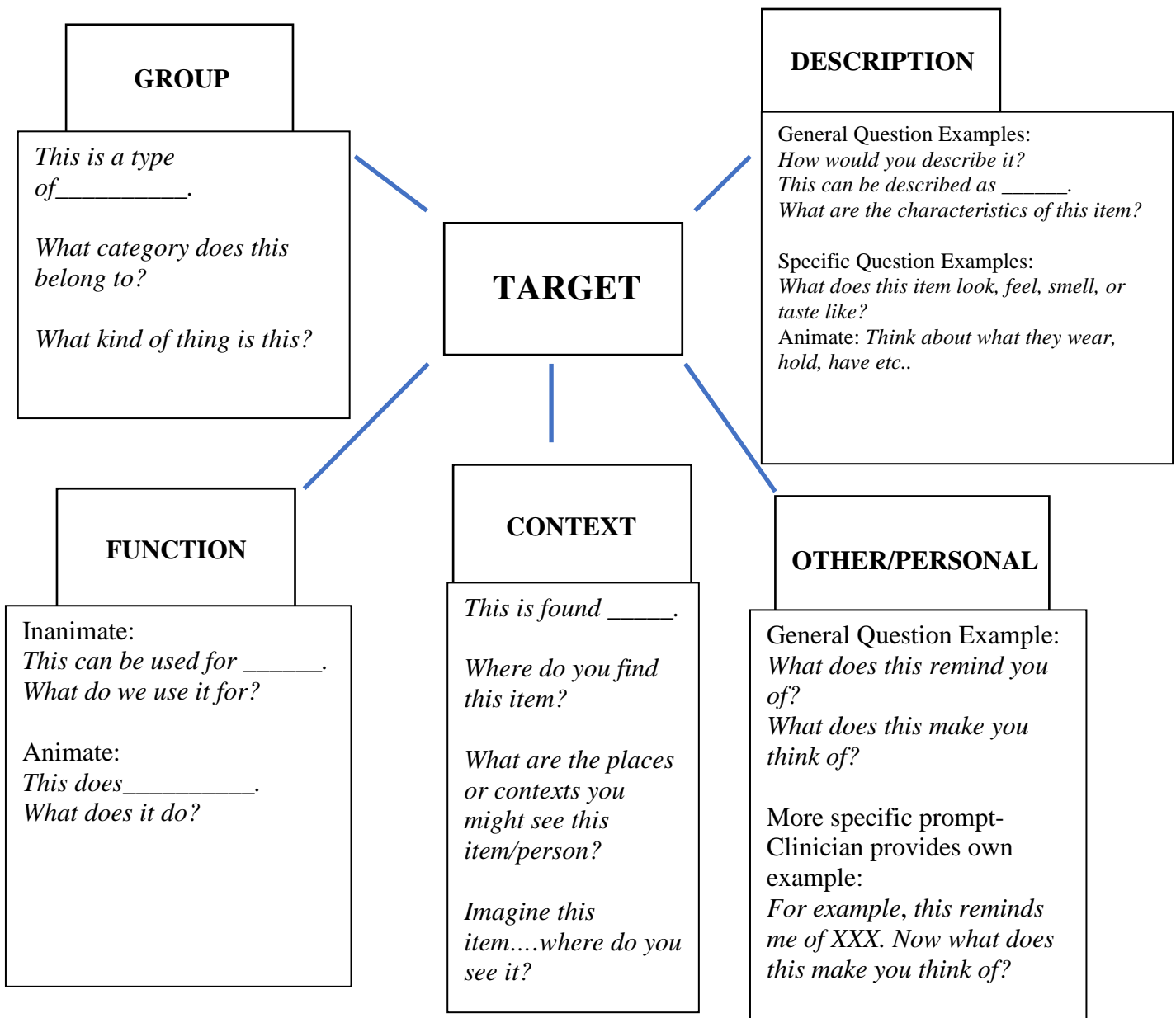
ID	Participant	Age (years)	Sex	Education level (years)	Duration post onset (years)	Handedness	Non-verbal			Auditory		Phonologic		Reading		Verbal Short Term	
							Reasoning Ravens (out of 36)	Lexical Retrieval (out of 60)	BNT (out of 30)	Comprehension CAT Spoken Language t-score	Processing SAPA (out of 144)	Verbs (out of 25)	Comprehension CAT of Written Language t-score	Writing CAT Production of Written Language t-score	Memory TALSA Digit Span (out of 7)	Memory TALSA Word Span (out of 7)	
PM01	1	71	F	15	1.42	R	35	49	62	59	116	23	66	69	3.2	3	
PM02	2	46	F	16	1.25	R	28	23	54	58	79	12.67	62	69	4.05	4.05	
PM03	3	59	F	16	5.25	R	33	42	62	50	110	13.33	54	56	4	3.1	
PM04	4	67	M	12	2.75	R	29	46	62	60	94	19.33	59	59	4.15	3.1	
PM05	5	70	F	12	6.75	R	23	6	38	39	61	1.67	48	44	1.05	1.05	
PM06	6	40	F	16	1.83	R	36	5	62	51	73	4.5	48	52	3	2	
PM07	7	59	M	18	2.25	R	32	6	54	54	58	2	50	55	2.2	2.05	
PM08	8	71	F	14	0.83	R	31	36	62	58	111	17.67	60	52	2.15	2	
PM09	9	65	M	16	8.42	R	34	4	62	44	62	0.33	49	53	2.1	3.05	
PM10	10	73	M	16	2.33	R	28	6	54	49	49	0.67	44	43	1.1	2	
PM11	11	73	F	13	2.5	R	34	12	50	50	100	17	54	53	3.05	2	
PM12	12	67	M	16	4.17	R	32	20	54	53	84	6	56	57	3.15	2.2	
PM13	13	46	M	13	7.08	L	*	14	50	45	48	5.67	44	41	1.1	1.15	
PM14	14	59	F	12	3.67	R	26	0	16	35	30	0	40	48	*	*	
PM15	15	71	F	16	3.67	R	34	41	54	52	109	22	66	62	3.15	3.1	
PM16	16	90	F	12	6.42	L	29	26	54	58	79	16	59	60	4.2	3.05	
PM17	17	63	M	13	4	R	35	32	62	45	77	10.33	56	50	3	2	
PM18	18	60	M	14	2.75	L	19	2	62	46	50	1.5	50	46	2.05	2	
PM19	19	46	M	11	24.83	R	35	3	62	41	41	3.67	37	51	*	*	
PM20	20	74	F	14	0.92	R	25	3	62	44	53	1.33	48	44	*	1	
PM21	21	63	M	16	2	L	32	2	62	50	35	0	42	45	*	1.15	
PM22	22	62	M	16	0.83	R	35	46	54	58	105	15.33	55	59	3.15	3.1	
PM23	23	50	M	12	2.08	R	29	1	62	52	79	2.5	51	48	*	*	
PM24	24	67	F	16	1.67	R	32	39	62	45	93	12.5	54	51	1.2	2.05	
PM25	25	70	M	12	4.42	R	21	32	54	55	55	13	49	50	2.15	2	
PM26	26	66	F	12	9.42	R	22	40	62	58	94	15	54	*	3.1	2.2	
PM27	27	65	M	14	1.42	L	22	52	62	55	88	20.67	54	49	3.1	2.15	
PM28	28	59	M	18	4.17	L/R	33	16	50	47	60	0.33	54	48	3.05	1.2	
<b>AVE</b>		<b>63.3</b>		<b>14.3</b>	<b>4.3</b>		<b>29.8</b>	<b>21.6</b>	<b>55.9</b>	<b>50.4</b>	<b>74.8</b>	<b>9.2</b>	<b>52.3</b>	<b>52.4</b>	<b>2.7</b>	<b>2.2</b>	
<b>SD</b>		<b>10.6</b>		<b>2.0</b>	<b>4.7</b>		<b>5.0</b>	<b>17.8</b>	<b>9.8</b>	<b>6.6</b>	<b>24.9</b>	<b>7.8</b>	<b>7.2</b>	<b>7.3</b>	<b>1.0</b>	<b>0.8</b>	

M = male; F = female; BNT = Boston Naming Test; CAT Memory = Comprehensive Aphasia Test Memory Composite Score (Semantic Memory + Recognition Memory); SAPA = Standardized Assessment of Phonology in Aphasia; TALSA = Temple Assessment of Language and Short Term Memory in Aphasia; AVE = average; \* indicates missing data

## Appendix C

Semantic Feature Analysis treatment protocol. Reprinted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Reprinted with permission.

SFA Template with examples of clinician prompts provided in overlaid boxes in italics:



**Prompting Hierarchy:** Prompt (1) = General question; Prompt (2) = More specific prompting, focusing the participant’s attention to specific attributes of the target (for description, function and context) or rephrasing the questions; Prompt (3) = a forced choice

question (for all categories) with a maximally dissimilar foil. Example: *Is this a type of bird or weapon?*

Steps of SFA treatment trial:

1. Participant is shown target photo in the middle of the SFA chart and asked to name the photo (spoken modality only; all other modalities discouraged): 10 seconds provided
2. Regardless of accuracy in step 1, the participant is guided through the 5 categories in order and asked to verbally generate at least 2 (no more than 3) distinguishing semantic features for each category. For each category, the clinician begins by providing the first general prompt (See examples on SFA template) and the participant is given ~ 10 seconds to respond.
  - a. Accurate Response(s): The clinician repeats the feature(s), provides optional verbal reinforcement, types the feature(s) into the chart, and checks the “PG” box to indicate the response was “patient generated”. The clinician then asks for another feature if needed (up to a total of 3 features, excluding “Group” and “Other” categories which only require 1 feature to be generated by the participant) and another ~5- to 10-second window is provided.
  - b. Inaccurate Response(s): The clinician begins the prompting hierarchy starting with a more specific prompt, question rephrase, or clinician example (Other/Personal-see example on SFA template) followed by ~10-second response window. If the participant provides another inaccurate response or a weak response, verbal feedback is provided and a forced choice question is asked (using a distinctive feature and a maximally dissimilar foil that does not correspond to the target) and the participant is given ~5 seconds to respond. Verbal feedback regarding forced choice accuracy is provided and the appropriate choice is typed in the chart. The clinician then asks for another feature if needed (up to a total of 3 features, excluding “Group” and “Other” categories which only require 1 feature to be generated by the participant) and another ~5- to 10-second window is provided.
  - c. Weak Response(s): Clinician may say something like “That’s close, but not quite right, can you think of something else?” or “Can you be more specific?”. With fluent patients, you may need to cue by saying something like “give me one word”. After 10 seconds, if the participant is unable to modify their response, or if they provide an inaccurate or another weak response, they are provided with the forced choice question (prompt #3). Verbal feedback regarding forced choice accuracy is provided and the appropriate choice is typed in the chart. The clinician then asks for another feature if needed (up to a total of 3 features, excluding “Group” and “Other” categories which only

require 1 feature to be generated by the participant) and another ~5- to 10-second window is provided.

\*Note: After 2 features have been provided by the participant, the clinician will again prompt for another feature “can you think of another \_\_\_\_\_” followed by ~5 seconds. If the response is accurate, type it into the chart, if it is weak or inaccurate, the clinician gives optional verbal feedback, provides a salient feature, and writes it on the chart.

3. After features have been generated for all categories, the participant is again asked to name the target (10-second response window provided).
  - a. Accurate Target Response: Clinician provides verbal reinforcement and moves to the sentence generation task. This is considered a successful SFA trial
  - b. Inaccurate Target Response: Clinician provides verbal feedback and models the correct target response and asks for a repeat. If the participant cannot repeat the target, integral stimulation is used to elicit a simultaneous production x1. Regardless of participant’s ability to repeat the target, the clinician guides the participant in a review of the most salient features for each category. The clinician will select one salient feature from each of the 5 categories and point to the written word as they verbalise it. Following review, the clinician will again request that the participant name the item. If unable to name it the clinician will model accurate production once. This is considered an unsuccessful SFA trial.

## Appendix D

Trained stimuli for Semantic Feature Analysis. Reprinted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Reprinted with permission.

High-frequency word list								
Category	Body Parts	Clothing and Accessories	Food and Beverages	Household	Hobbies, Recreation/ Sports	Nature	Occupations	Transportation
Targets	lungs	buttons	pudding	refrigerator	wrestling	rainbow	photographer	carriage
	chin	necklace	cereal	oven	bowling	hurricane	farmer	limo
	thumb	skirt	potatoes	bench	swimming	clouds	dentist	motorcycle
	toes	pockets	corn	rug	hockey	lawn	policeman	jeep
	palm	leather	rice	pillow	soccer	waves	chef	subway
	bone	tie	apple	plate	fishing	snow	pilot	elevator
	tongue	belt	soup	closet	painting	desert	priest	tank
	lips	shoe	juice	gate	baseball	coast	actor	bike
	ear	glasses	bread	roof	golf	trees	artist	taxi
	fingers	jacket	pizza	bedroom	football	mountain	nurse	traffic

Low-frequency word list								
Category	Body Parts	Clothing and Accessories	Food and Beverages	Household	Hobbies, Recreation/ Sports	Nature	Occupations	Transportation
Targets	trachea	bowtie	avocado	armoire	rafting	spiderweb	umpire	tugboat
	bellybutton	cardigan	pineapple	bookshelf	origami	geyser	veterinarian	rickshaw
	toenail	kilt	cinnamon	quilt	archery	sunflower	miner	boxcar
	pinkie	beret	macaroni	mixer	croquet	beehive	pianist	blimp
	calves	mittens	lime	silverware	fencing	petal	ballerina	rowboat
	heel	scarf	oatmeal	mattress	skiing	volcano	mechanic	canoe
	elbow	slippers	gravy	stove	photography	avalanche	musician	skates
	cheek	vest	lemonade	candle	yoga	autumn	rabbi	tractor
	forehead	sleeve	tomato	cabinet	camping	seeds	nun	ferry
	ankle	jeans	garlic	ceiling	chess	pond	magician	submarine

## Appendix E

Phonomotor Treatment protocol. Reprinted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Reprinted with permission.

Treatment materials	<ul style="list-style-type: none"> <li>• Small mirror</li> <li>• Line drawings of mouth postures, icons for voiced/voiceless consonants</li> <li>• Letter tiles</li> <li>• Wipe-off board with markers</li> <li>• Small colored blocks</li> </ul>	
	<b>Stage 1: Sounds in Isolation</b>	<b>Stage 2: Sounds in syllables</b>
Overview	<p>The purpose of Stage 1 is to explicitly train sounds in isolation. Sounds are trained through multi-modal instruction using tasks designed to engage articulatory-motor, acoustic, tactile-kinesthetic, and orthographic representations.</p> <p><b>Consonant sounds</b> are introduced as cognate pairs by place/manner of articulation in the following order: lip sounds (<i>p/b, f/v</i>), tongue sounds (<i>t/d, k/g, th/th</i>), air sounds (<i>s/z, sh/zh, ch/j</i>), tongue lifters (<i>l/r</i>), nasal sounds (<i>m/n/ng</i>), windy sounds (<i>h/w/wh</i>). When mastery of a consonant pair is achieved (e.g., <i>p/b</i>) in perception and production, the next sound pair is introduced (e.g., <i>t/d</i>). Once a sound pair is introduced, training continues on this pair in all subsequent sessions. Once a participant can perceive and produce all consonants in isolation, corresponding graphemes are introduced and paired with corresponding mouth pictures. (See supplemental handout)</p> <p><b>Vowel sounds</b> are trained according to lip and jaw placement via mouth pictures and letter tiles (see Supplemental video). Three vowel sounds (<i>ee, o, oo</i>) are introduced with consonants to allow for minimal pair discrimination (e.g., <i>eep, op, oop</i>). The remaining vowels are trained after consonants. (See supplemental handout)</p>	<p>The purpose of Stage 2 is to extend skills acquired in Stage 1 to phoneme sequences. Treatment tasks remain similar to Stage 1 tasks, with the exception that sounds will be produced in combinations rather than isolation. Training progresses from shorter to longer (more complex) sequences (e.g., VC, CV, CVC, CCV, VCC, CCVC, CVCC, CCVCC). Both real and nonwords are trained using phonologic tasks (in other words, only phonological features, <i>not</i> semantic features, are trained for real words). Nonword training is introduced before real word training to allow for emphasis on phonology; however, as treatment progresses nonwords and real words are trained simultaneously.</p>

<p><i>Introduction of sounds and sound sequences</i></p>	<p>Participant observes SLP producing a single sound (e.g., <i>p</i>). SLP asks participant what they observed (heard, saw) and if needed, describes what articulators are moving and how they move. For the sound <i>p</i>, for example, "the lips come together and blow apart, the sound is 'quiet' so the voice is turned off, the tongue is not moving." The participant is then shown the line drawing of the mouth posture corresponding to the sound (see Supplemental video 1).</p> <p>After looking at the mouth picture and hearing the SLP's production, the participant is then asked to repeat the sound while looking in the mirror. The participant is also asked to place their hand on their throat in order to feel for vocal fold vibration ("quiet" versus "noisy"). Following production, the SLP asks the participant what s/he saw and felt when the sound was made. Socratic questioning is used to enable the participant to "discover" the auditory, visual, articulatory, and tactile/kinesthetic attributes of the sound (e.g., "What do you feel when you make that sound? What moved? What did you see when you made that sound?" etc.).</p>	<p>Exploration of sounds primarily occurs in Stage 1; however, exploring sounds can also be used later in the program to help the participant identify individual phonemes within a phoneme sequence. For example, if a participant had trouble parsing the initial sound in <i>peef</i>, the SLP would use Socratic questioning (e.g., "What do you feel when you make that first sound? What moved? Did your lips or tongue move when you made that sound?" etc.) to help identify the initial sound <i>p</i>. See Supplemental video 2.</p>
<p><i>Perception tasks</i></p>	<p>Perception of sounds in isolation can be trained through various tasks. Here are some examples:</p> <ul style="list-style-type: none"> <li>• <b>Mouth pictures:</b> SLP produces a sound (e.g., <i>p</i>) and asks the participant to choose that sound from an array of mouth pictures (<i>, p, b, t, d</i>)</li> <li>• <b>Colored blocks:</b> SLP produces a string of individual sounds (e.g., <i>p, t, t, b</i>) and asks the participant to lay out blocks to demonstrate ability to discriminate sounds (e.g., blocks: red, blue, blue, green).</li> <li>• <b>Verbal:</b> SLP produces two sounds (e.g., <i>p, p</i> or <i>p,b</i>) and asks the participant "same or different."</li> <li>• <b>Letters:</b> SLP produces a sound and asks participant to point to the corresponding letter.</li> </ul>	<p>The SLP produces a real or nonword sound combination and asks the participant to depict the target through various tasks:</p> <ul style="list-style-type: none"> <li>• <b>Mouth pictures:</b> If the participant heard the CVC <i>peef</i>, they would select the pictures corresponding to <i>p, ee</i>, and <i>f</i>.</li> <li>• <b>Colored blocks:</b> If the participant heard the CVCV <i>peefee</i>, they would select three differently colored blocks arranged in the following order: white, black, red, black.</li> <li>• <b>Verbal:</b> If the participant heard the CCVCs <i>groom</i> and <i>groom</i>, the SLP would ask "same or different."</li> <li>• <b>Letters:</b> If the participant heard <i>chootee</i>, s/he would select the corresponding letter tiles.</li> </ul>
<p><i>Production tasks</i></p>	<p>Production of sounds in isolation can be trained through various tasks. Here are some examples:</p> <ul style="list-style-type: none"> <li>• <b>Mouth pictures:</b> The SLP shows participant a mouth picture and asks the participant to produce that sound (e.g., <i>d</i>).</li> <li>• <b>Motor description:</b> The SLP describes a sound (e.g., "make the sound where your voice is noisy and your tongue quickly taps the roof of your mouth") and asks the participant to say the sound.</li> <li>• <b>Verbal:</b> The SLP asks the participant to repeat a sound <i>p</i> or a string of individual sounds <i>p, p, s, d</i>.</li> <li>• <b>Letters:</b> SLP shows the participant a letter to elicit production of the sound.</li> </ul>	<p>The SLP elicits a real or nonword sound combination by asking the participant to produce the target through various tasks:</p> <ul style="list-style-type: none"> <li>• <b>Mouth pictures:</b> The SLP lays out a series of mouth pictures and asks the participant to "touch and say" each sound (<i>f-ee-p</i>) and then blend the sounds to produce the target (<i>feep</i>).</li> <li>• <b>Verbal:</b> The SLP asks the participant to repeat a nonword <i>groom</i> and parse the word apart (<i>g-r-oo-k</i>).</li> <li>• <b>Letters:</b> The SLP lays out letter tiles (or writes letters on dry erase board). The participant parses out the sounds by underlining and verbalizing each grapheme and then blends the sounds to produce the target.</li> </ul>



## Appendix F

Trained stimuli for Phonomotor Treatment. Reprinted from “Phonomotor versus Semantic Feature Analysis Treatment for anomia in 58 persons with aphasia: A randomized controlled trial” by D.L., Kendall, M., Oelke, W., Allen, J., Torrence, & S.E., Nadeau, under revision. Copyright 2018 by D.L. Kendall. Reprinted with permission.

Trained sounds in isolation		Nonwords		Real Words	
IPA symbol	Trained graphemic representation(s)	1-syllable	2-syllable	1-syllable	2-syllable
p	p	doi (dɔɪ)	chootee (tʃuti)	plane	meadow
b	b	af (æf)	teever (tivə)	bride	ivy
f	f	toos (tus)	foekoe (fookou)	bruise	level
v	v	sheev (ʃiv)	leber (ləbə)	knot	shoulder
t	t	ek (ɛk)	doem (douam)	jeans	ranger
d	d	dach (dætʃ)	mefoe (məfoʊ)	ape	heater
k	k	peenz (pinz)	shever (ʃevə)	pie	teacher
g	g	poeuh (pouə)	feether (fiðə)	fur	movie
θ	th	meeth (miθ)	toiler (tɔɪlə)	knee	polo
ð	th	veed (vid)	iezl (aɪzl)	maze	genie
s	s	ish (ɪʃ)	shaybee (ʃeɪbi)	ditch	halo
z	z	whup (wʌp)	veeder (vidə)	wheel	father
ʃ	sh	breek (brik)	zower (zauə)	mop	jockey
ʒ	zh	voʊ (vu)	tawthee (tɑθi)	fire	tiger
tʃ	ch	eep (ip)	jiver (dʒɪvə)	knob	diver
dʒ	j	reesh (riʃ)	wooter (wutə)	cave	shower
l	l	nie (nai)	dungee (dʌŋi)	bird	owl
r	r	iej (aɪdʒ)	turmee (tɜːmi)	jail	gravy
h	h	zine (zain)	iebee (aɪbi)	witch	clover
w	w	broiz (brɔɪz)	lekee (ləki)		speaker
wh	wh	thag (θæg)	juroe (dʒɜːo)		
m	m	oit (ɔɪt)	shasoe (ʃæsou)		
n	n	kur (kɜː)	hoyter (hoɪtə)		
ŋ	ng	froos (frus)	neenee (nini)		
i	ee	grake (greɪk)	raezl (reɪzl)		
ɪ	i	choy (tʃɔɪ)	hieger (haɪgə)		
ɛ	e	oos (us)	woewuh (woʊwə)		
eɪ	ae	wap (wæp)	unger (ʌŋgə)		
æ	a	faps (fæps)	miever (maɪvə)		
ʌ, ə	u	woy (wɔɪ)	jawvee (dʒavi)		
ɑ, ɔ	o, aw	awch (aʊtʃ)	prezhur (preʒə)		

o, ou	oe	plown (plaon)	foover (fuvə)
o	oo	zae (zei)	pire (paiə)
u	oo	hob (hab)	driepər (draipə)
ai	ie	veed (vid)	gower (gauə)
ju	ue		
oi	oi, oy		
au	ow, ou		
ɜ, ø	er, ir, ur		
or	or		
ar	ar		