

Supplementary Material 1: Sample Search Strategy

In PubMed:

Line 1: aphasia Line 2: AND treatment OR therapy OR intervention OR rehabilitation OR outcome OR training Line 3: AND adult
Line 4: NOT primary progressive aphasia OR dementia OR dysphagia OR transcranial magnetic stimulation OR transcranial direct
current stimulation Line 5: NOT pharmaceutical preparations.

Article type was limited to Case Reports, Clinical Study, Clinical Trial, Clinical Trial, Phase I, Clinical Trial, Phase II, Clinical Trial,
Phase III/CLASS IV, Clinical Trial, Phase IV, Comparative Study, Controlled Clinical Trial, Dataset, Meta-Analysis, Multicenter
Study, Observational Study, Practice Guideline, Randomized Controlled Trial, Systematic Reviews, Validation Studies and Evaluation
Studies. No other limits or filters were applied.

Supplementary Material 2: Frequency of outcome measure use

Outcome	Type	<i>n</i>
WAB-AQ	Study	80
	Subject	1276
BNT	Study	53
	Subject	673
CETI	Study	27
	Subject	458
CADL-2	Study	11
	Subject	89
Scenario	Study	1
Test	Subject	34
ACOM	Study	1
	Subject	73
SAQOL	Study	2
	Subject	34

SAQOL-39	Study	6
	Subject	87
SAQOL-39g	Study	1
	Subject	20
ALA	Study	2
	Subject	23
GHQ-12	Study	2
	Subject	14

Note: Indicates the outcome measure, the number of studies reporting the measure and the cumulative number of subjects reported for the measure. CADL-2= Communication Activities of Daily Living-Second Edition; ACOM= Aphasia Communication Outcome Measure; SAQOL= Stroke and Aphasia Quality of Life Scale; ALA= Assessment For Living With Aphasia; GHQ-12= 12-item General Health Questionnaire

Supplementary Material 3. Quality indicators for assessing included studies

Indicator	Description
1. Study protocol	Adequate detail about the study protocol was given for the study to be replicated.
2. Blinding	Participants were blinded to condition. Assessors were blinded to condition/treatment.
3. Sampling/allocation	For example: random sample, convenience sample, not described, etc.
4. Treatment fidelity	Administrators established that the treatment protocol was delivered as planned.
5. Significance for primary outcome measure of interest (e.g., trained verbs)	Statistical analyses were conducted and p-values were reported.
6. Significance for standardized outcome measure of interest (i.e., WAB, CETI, BNT)	Statistical analyses were conducted and p-values were reported.
7. Precision	Effect size was reported or calculable.
8. Intention to treat	Data was analyzed based on the group to which the participants were originally assigned.

Note: Indicators: 1, 2, and 4-8 were scored as either (+) for present, or (-) for absent. Indicator 3 consisted of qualitative information. (+) values were tallied to create quality indicator summative scores. This table was adapted from Table S3. 1 in Faroqi-Shah, Y, Frymark, T, Mullen, R, & Wang, B. Effect of treatment for bilingual individuals with aphasia: A systematic review of the evidence. *Journal of Neurolinguistics*. 2010;23(4):319-341.

Supplementary Material 4: Demographic information for within group studies using the Western Aphasia Battery – Aphasia Quotient

Note: M=Male; F = Female; TCM = transcortical motor; TSM = transcortical sensory; sev. = severe; I = Impairment-based treatment; A/P = activity/participation-based treatment; INT = integrated treatment; st. = standardized; CS = convenience sample

Study Name	Study N; N for outcome measure; Sex	Mean Age(SD) range	Aphasia Type	Aphasia Severity (WAB-AQ)	Mean MPO range	Treatment(Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Methodological Rigor
Aftonomos, Appelbaum, & Steele, 1999	60; 60; M = 35; F = 25	68.60(12.30) 24-86	Broca's = 21 Anomic = 13 Global = 11 Wernicke's = 8 Conduction = 3 TCM = 2 TSM = 1 Isolation = 1	Mod.-to-sev.	24.60 .24-144	Type: INT Description: Individual treatment using the Lingraphica (icon-based language system) to provide therapeutic exercises at the appropriate level for participants' severity. Also, focused on improving functional communication outside of the clinic as well as provided home exercises. Intensity: 2x/week, 60 min, 20.5 weeks	42.50(27.40) 51.60(28.70) 9.10	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Archibald, Orange, & Jamieson, 2009	8; 8; M = 6; F = 2	71.00(11.15) 55-87	Anomic = 4 Broca's = 2 Conduction = 1 Global = 1	Mild = 3 Mild-to-Mod. = 2 Mod. = 1 Sev. = 2	48.38 7-150	Type: I Description: Computer-provided treatment via AphasiaMate across 8 modules (i.e., auditory comprehension, visual matching, reading comprehension, spelling, semantics, sentence processing). Patients used computer at home or in clinic with trained personnel. Intensity: 1x/week, 60 min, 15 weeks	60.29(33.37) 66.64(27.50) 6.35	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Babbitt, Worrall, & Cherney, 2015	74; 74; M = 52; F = 22	54.10(16.30) 18-86	Nonfluent = 49 Fluent = 25	Mod.	15.5 3-87	Type: INT Description: Intensive Comprehensive Aphasia Program (ICAP): two individual therapy sessions and one session each of constraint-induced language therapy (CILT), reading/writing, computers and conversation group for six hours of daily programming. Intensity: 5x/week, 360 min, 4 weeks	51.30(21.80) 58.60(21.30) 7.30	Level of Evidence: IIB/ class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Bakheit, Carrington, Griffiths, & Searle, 2005	67; 67; M = 31; F = 36	71.90(N/A) 38-92	Broca's = 21 Anomic = 18 Global = 15 Wernicke's = 9 Conduction = 3 TCM = 1	Mod.-to-sev.	12.72 n/a	Type: n/a Description: Individual "conventional" SLP sessions targeting comprehension and expression to improve functional communication. Tasks included selecting pictures/objects, naming objects, describing/recognizing associations between items, facilitating the expression of feelings and improving conversational ability. SLPs encouraged the use of gesture and other non-verbal communication including aids and equipment. Intensity: 2-5x/week, 40-60 min, 12 weeks	44.30(28.10) 67.40(25.50) 23.10	Level of Evidence: IIB/ class III Study protocol: + Blinding: + Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Ball, de Riesthal, Breeding, & Mendoza, 2011	3; 3; M = 1; F = 2	70.67(3.21) 67-73	Global = 2 Conduction = 1	Mod. = 1 Sev. = 2	28.33 26-33	Type: I Description: Modified Anagram and Copy Treatment (ACT) and Copy and Recall Treatment (CART) (Beeson, Hirsch & Rewega, 2002 Beeson, Rising & Rolk, 2003) Intensity: 1x/week, 60 min, 12 weeks (daily home practice)	23.80(20.35) 28.87(17.83) 5.07	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Beeson, Rising, & Volk, 2003	8; 8; M = 5; F = 3	71.00(5.98) 64-79	Broca's = 7 Wernicke's = 1	Mod.-to-sev. = 1 Sev. = 7	39.75 24-84	Type: I Description: Copy and Recall Treatment (CART): 1) Show a picture 2) Have PWA write the word and support them in writing the word, if needed 3) Remove the word and show picture again and have them write three more times again. Stimuli (i.e., 20 words) was developed with family support to make it functionally relevant. Intensity: 1x/week, 60 min, 17 to 30 weeks	20.59(5.31) 19.75(4.81) -0.84	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: -

								Precision: + Intention to treat: N/A
Boles, 1997	4; 4; M = 1; F = 3	56.00(15.38) 47-79	N/A	Mild = 3 Mod. = 1	28.75 7-84	Type: INT Description: Conversation partner therapy: Family member was coached by SLP to facilitate communication with PWA. Intensity: 2x/week, 60 min, 7 weeks	70.70(9.85) 74.10(8.62) 3.40	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Breier, Maher, Novak, & Papanicolaou, 2006	6; 6; M = 4; F = 2	61.33(8.80) 53-77	Broca's = 5 Conduction = 1	Mild-to-Mod. = 2 Mod. = 2 Mod.-to-sev. = 1 Sev. = 1	46.83 21-70	Type: A/P Description: Constraint Induced Language Therapy (CILT) = Only verbal expression was accepted and multi-modality communication was restricted, even self-cueing. Treatment was conducted in dyads and consisted of a dual card task with barrier present (i.e., PWA took turns requesting a card or responding another's request). Stimuli included four sets of cards of different semantic categories with two levels of difficulty (i.e., low- and high-frequency). Clinicians used shaping (i.e., increasing communicative demands of request/response from single words to lengthier sentences) and cueing for a successful production (i.e., semantic, phonemic, repetition). Intensity: 4x/week, 180 min, 3 weeks	52.22(21.99) 54.45(24.65) 2.23	Level of Evidence: IIB, class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Brown & Chobor, 1989	10; 10; M = 7; F = 3	64.90(N/A) 55-76	Nonfluent = 9 Fluent = 1	Mild-to-Mod. = 1 Mod. = 2 Mod.-to-sev. = 3 Sev. = 5	77.99 36- 120	Type: I Description: Writing treatment with right arm using a prosthesis which included four stages 1) geometric shapes 2) block letter alphabet 3) low- and high-frequency words and 4) two- and three-word short phrases. PWA went through three training phases: tracing, copying and writing to command within each of these stages. Intensity: 2x/week, 60 min, 12 weeks	36.40(19.75) 44.80(23.00) 8.40	Level of Evidence: IIB, class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Cherney, Halper, Holland, & Cole, 2008	3; 3; M = 1; F = 2	69.33(7.51) 65-78	Broca's = 1 Wernicke's = 1 Anomic = 1	Mild-to-Mod. = 1 Mod. = 2	28.33 18-48	Type: A/P Description: AphasiaScripts software program was used for script training. 1) PWA listened to script while it is visible on the screen. 2) PWA reads the sentence twice chorally with avatar. PWA practice any words with which they had difficulty. 3)PWA reads each sentence aloud on their own. The computer records their response. 4) PWA can listen to the recorded sentence and then, practice and record again, if they want. PWA were trained sequentially on three scripts (i.e., three weeks each script). They practiced at home for 30 minutes daily. Clinician observed participants practicing once per week. Intensity: 5x/week, 30 min, 9 weeks	62.13(11.41) 65.83(7.96) 3.70	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Cherney & Halper, 2008	3; 3; M = 2; F = 1	64.00(12.77) 50-75	Nonfluent = 2 Fluent = 1	Mild-to-Mod. = 1 Mod. = 2	36 12-48	Type: I Description: AphasiaScripts software program was used for script training. 1) PWA listened to script while it is visible on the screen. 2) PWA reads the sentence twice chorally with avatar. PWA practice any words with which they had difficulty. 3)PWA reads each sentence aloud on their own. The computer records their response. 4) PWA can listen to the recorded sentence and then, practice and record again, if they want. PWA were trained sequentially on three scripts (i.e., three weeks each script). They practiced at home for 30 minutes daily. Clinician observed participants practicing once per week. Intensity: 5x/week, 30 min, 8 weeks	61.43(16.95) 63.53(13.51) 2.10	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Cherney, 2010	25; 25; M = 16; F = 9	55.38(9.49) 35-82	Nonfluent	Mod.	52.47 12-253	Type: I Description: Oral Reading for Language in Aphasia (ORLA): 1) PWA listened to the sentence twice while reading it on a card or on the computer and pointing to each word in the sentence 2) PWA read the sentence aloud with the SLP twice 3) PWA identified two or three words randomly and read them aloud 4) PWA and SLP read the whole sentence again together. Thirty different stimulus items of a certain length (i.e., 3-5 words, 8-12 words and 15-30 words) according to their severity level were practiced within the session. Intensity: 2-3x/week, 60 min, 8-12 weeks	54.59(29.68) 56.98(29.37) 2.38	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Doyle, Goldstein, & Bourgeois, 1987	4; 4; M = 3; F = 1	55.75(9.32) 42-62	Broca's = 4	Mild-to-Mod. = 2 Mod. = 2	117.5 30-177	Type: I Description: Treatment incorporated Helm Elicited Language Program for Syntax Stimulation (HELPS), which included sentence production training with Level A prompting (i.e., delayed repetition) and Level B prompting (i.e., verbal stimulus requiring response to a question). Intensity: 3x/week, 6 months max	65.68(4.93) 69.28(4.20) 3.60	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Duncan, Schmah, & Small, 2016	19; 19; M = 15; F = 4	53.50(11.70) 31-72	Broca's = 9 Anomic = 6 Conduction = 1 Wernicke's = 1 TSM = 1 TCM = 1	Mild-to-Mod.	chronic 5-130	Type: I Description: Imitation-based therapy wherein PWA listened to words and phrases produced by six different speakers and then, repeated them once or numerous times. Half of the PWA were also exposed to a video of the speaker. Intensity: 6x/week, 90 min, 6 weeks	67.72(20.00) 70.34(18.33) 2.62	Level of Evidence: III/ class IV Study protocol: + Blinding: + Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Edmonds & Kiran, 2006	3;3; M = 1; F = 2	54.00(1.73) 53-56	Nonfluent = 3	Mod. =2 Sev. = 1	8.67 8-9	Type: I Description: Semantic feature analysis-based (SFA-based) treatment (Boyle & Coehlo, 1995 Kiran & Thompson, 2003) involving the following steps: 1) initial naming attempt 2) written feature verification 3) yes/no feature questions 4) second naming attempt. Treatment was administered in both languages. Intensity: 2x/week, 120 min, 7-34 weeks	48.33(24.66) 58.33(16.07) 10.00	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Edmonds, Mammino, & Ojeda, 2014	11;10; M = 6; F = 4	63.30(13.07) 35-81	Anomic = 5 Conduction = 2 TCM = 2 Wernicke's = 1	Mild = 1 Mild-to-Mod. = 8 Mod. = 1	57.5 14-144	Type: I Description: Verb Network Strengthening Treatment (VNeST): PWA were given a verb then, asked to retrieve related agents and patients. They are encouraged and supported to generate multiple pairs of agents and patients for each verb. Intensity: 2x/week, 120min, 10 weeks	75.91(10.36) 82.08(8.54) 6.17	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Edmonds, Nadeau, & Kiran, 2009	4; 4; M = 1; F = 3	61.50(10.08) 52-75	TMA = 2 Conduction = 2	Mild-to-Mod. = 4	37.25 10-96	Type: I Description: Verb Network Strengthening Treatment (VNeST): 1) PWA were given a verb. 2) Asked to produce 3-4 thematic role pairs. 3) Picked a thematic role pair and answered wh-questions about it Intensity: 2x/week, 120 min, avg. 4.75 weeks (4-6 weeks)	74.83(3.41) 83.10(2.27) 8.28	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Falconer & Antonucci, 2012	4; 4; M = 3; F = 1	45.75(15.09) 31-62	Conduction = 2 Broca's = 1 TCM = 1	Mild-to-Mod. = 1 Mod. = 2 Mod.-to-sev. = 1	86.99 24-156	Type: INT Description: Modified Promoting Aphasics' Communication Effectiveness (PACE) approach: Within a small group, PWA took turns describing stimuli hidden from others with enough detail for others to guess the item) When word-retrieval difficulty occurred, the activity was briefly discontinued while PWA were led through the SFA chart (Boyle,2004) until they accessed the target. HW assignments included describing difficult-to-name pictured objects using SFA outside of treatment sessions. Intensity: 2x/week, 90-120 min, 7 weeks	54.15(15.39) 57.00(16.22) 2.85	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Faroqi-Shah, 2013	6; 6; M = 5; F = 1	47.67(8.71) 37-56	Broca's = 6	Mild-to-Mod. = 3 Mod. = 2 Sev. = 1	33.17 16-84	Type: I Morphosemantic treatment: 1) name action in 3 pictures 2) grammaticality judgment 3) match spoken sentence to picture 4) PWA were given a sentence and asked to write the verb inflection to match the picture 5) PWA arranged words in the correct order to form the sentence matching the picture. Trained past, present and future tenses of 20 verbs. Intensity: 4x/week, 60-120 min, 3 weeks	59.97(22.20) 77.57(12.86) 17.60	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Faroqi-Shah, 2008	4; 4; M = 2; F = 2	64.50(3.87) 59-68	Broca's = 3 TCM = 1	Mild-to-Mod. = 1 Mod. = 3	56.99 12-108	Type: I Morphophonological treatment: 1) Naming the action from a picture 2) Auditory discrimination 3) Lexical decision 4) Morphology generation 5) Oral and written transformation 6) Repetition AND Morphosemantic treatment 1) Naming the action 2) Anomaly judgment (i.e., identifying mismatch between adverb & verb tense) 3) Auditory Comprehension (i.e., matching sentence to picture) 4) Sentence completion (i.e., fill in the blank with correct verb form) 5) Sentence construction (i.e., arranging words in the correct order) Intensity: 4-5x/week, 60-120 min, 3 weeks	64.65(2.83) 72.05(3.71) 7.40	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Ferguson, Evans, & Raymer, 2012	4; 4; M = 2; F = 2	57.75(14.20)	Broca's = 2 Conduction = 1 TCM = 1	Mild-to-Mod. = 2 Sev. = 2	34.75 22-41	Type: I Intention Gesture Treatment (IGT): 1) Participants generated L-hand gesture and pressed button to view target noun then, attempted to name. 2) If they were inaccurate, the SLP modeled the gesture and noun together and participant imitated 4-6 times. 3) SLP modeled again and PWA rehearsed gesture and verbal production 4-6 times. 4) PWA re-attempted to produce the target noun after producing gesture and pressing the red button. Pantomime Gesture treatment (PGT) 1) PWA were trained to produce pantomime gestures. 2) SLP pushed button to change picture, then PWA attempted to name. 3) If they were inaccurate, SLP produced gesture and verbal model of target and PWA imitated 4-6x. 4) SLP modeled again and participant practiced the gesture and verbal target again. 5) They re-attempted production of the target after SLP pressed button. Intensity: 2-3x/week, 45-60 min, 3-5 weeks, 1 week break then 2-3x/week, 45-60 min, 3-5 weeks	50.45(30.39) 55.70(30.84) 5.25	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
R. K. Johnson, Hough, King, Vos, & Jeffs, 2008	3; 3; M = 1; F = 2	67.67(10.07) 57-77	Broca's = 2 Mixed = 1	Mod. = 1 Mod.-to-sev. = 1 Sev. = 1	52.68 27- 93	Type: INT Description: Intensive therapy using computer-based augmentative alternative communication (AAC) (i.e., symbol identification, navigation, scenario role play, sentences). It involved training caregiver in	32.87(14.62) 33.40(6.48) .53	Level of Evidence: III/ class IV Study protocol: + Blinding: -

						therapy and use of an AAC device to reduce the severity of the impairment and increase activities and participation. Intensity: 3-4x/week, 60 min, 12 weeks		Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
M. L. Johnson et al., 2014	4; 4; N/A	70.75(9.57) 60-83	Broca's = 4	Mild-to-Mod. = 2 Mod. = 2	46.79 16-96	Type: A/P Constraint-induced aphasia therapy (CIAT) (i.e., discouragement of gesture and nonverbal vocalizations). Daily tasks included 1) Completion of How Well scale of the Verbal Activity Log (VAL) 2) Speech Repetition Drills 3) Activities of Daily Living (ADL) phrase repetition drills 4) Language Card game 5) Picture description 6) Role play 7) Home skill assignment. Caregiver present for all therapy. Intensity: 7x/week, 195 min, 2 weeks	66.23(7.14) 79.28(11.29) 13.05	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kendall et al., 2008	10; 10; M = 6; F = 4	52.40(11.40) 40-76	NS	Mild = 2 Mild-to-Mod. = 7 Mod. = 1	59.7 16-120	Type: I Description: Phonologically-based treatment: 1)Trains subjects on individual phonemes and 2) Trains phonological and orthographic sequence knowledge at the syllable level Intensity: 4x/week, 120 min, 12 weeks	77.12(14.47) 82.77(14.08) 5.65	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Kendall, Raymer, Rose, Gilbert, & Gonzalez Rothi, 2014	8; 8; M = 4; F = 4	62.00(9.65) 46-72	N/A	Mild = 3 Mild-to-Mod. = 3 Mod. = 1 Mod.-to-sev. = 1	63.13 11-120	Type: I Description: Naming pictures with semantic, phonologic, repetition and orthographic cueing hierarchy including a delayed-recall step. Intensity: 3x/week, 60 min, 3.5 weeks	74.45(18.29) 79.35(20.03) 4.90	Level of Evidence: III/ class IV Study protocol: + Blinding: + Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Kendall, Oelke, Brookshire, & Nadeau, 2015	26; 26; M = 15; F = 11	56.04(14.53) 26-78	NS	Above cut-off = 5 Mild = 6 Mild-to-Mod. = 9 Mod. = 5 Mod.-to-sev. = 1	47.5 8-211	Type: I Description: Multimodal, phonologically-based therapy using phonemes in isolation and one-, two-, and three-syllable sequences in real words and nonword combinations. More specifically, Stage 1) targeted sounds in isolation and Stage 2) targeted sounds in syllables. Each stage involves an overview, introduction of sounds and sound sequences, perception tasks and production tasks. Intensity: 5x/week, 120 min, 6 weeks	78.68(16.53) 82.65(12.58) - 0.08	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Kiran & Thompson, 2003	4; 4; M = 1; F = 3	68.50(5.92) 63-75	Fluent = 4	Mild-to-Mod. = 1 Mod. = 2 Mod.-to-sev. = 1	33.75 9-99	Type: I Description: Typicality-based SFA treatment involving 1) Naming 2) Category Sorting 3) Feature Verification 4) Answering yes/no questions Intensity: 2x/week, 120 min, 17-35 weeks	52.68(11.95) 60.90(12.81) - 8.23	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, 2005	3; 3; M = 3	63.67(4.16) 59-67	TCM = 1 Broca's = 1 Anomic = 1	Mild-to-Mod. = 2 Mod. = 1	156 24-288	Type: I Description: Phoneme-to-grapheme conversion: 1) writing to dictation of the word 2) copying the word 3) oral reading of the word 4) selecting and writing the sounds of the target 5) writing phonemes of the target word presented aloud 6) writing to dictation of the word Intensity: 2x/week, 120 min, 5-10 weeks	73.10(12.25) 70.97(14.33) - 2.13	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Kiran & Johnson, 2008	3; 3; M = 2; F = 1	62.33(11.15) 54-75	Anomic = 3	Mild = 1 Mild-to-Mod. = 2	18 7-36	Type: I Description: Typicality-based SFA treatment 1) Naming the picture 2) sorting pictures of target category 3) selecting written features for the target 4) answering written yes/no questions 5) naming the picture Intensity: 2x/week, 120 min, avg. 14 weeks (8-18 weeks)	84.70(2.42) 88.70(0.36) 4.00	Level of Evidence: III/ class IV Study protocol: - Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, 2008	5; 5; M = 1; F = 4	58.40(12.03) 47-77	Conduction= 3 Broca's = 2	Mild-to-Mod. = 1 Mod. = 3 Mod.-to-sev. = 1	8.2 7-10	Type: I Description: SFA-based treatment involved 1) naming the picture 2) sorting pictures by category 3) identify semantic features 4) answer yes/no feature questions Intensity: 2x/week, 60 min, 24 weeks	54.96(13.77) 64.02(12.91) 9.06	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, Sandberg, & Abbott, 2009	4; 4; M = 2; F = 2	56.75(15.63) 39-77	Anomic = 4	Mild = 4	25.5 8-43	Type: I Description: SFA-based treatment involving: 1) category sorting 2) feature selection 3) yes/no feature questions 4) word recall and 5) free generative naming. Intensity: 24 sessions	87.75(1.52) 90.58(1.63) 2.83	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Kiran, Sandberg, & Sebastian, 2011	6; 6; M = 3; F = 3	68.00(15.76) 39-84	Anomic = 4 Conduction=3	Mild-to-Mod. = 6	55.83 9-108	Type: I Description: SFA-based treatment involving 1) category generation 2) category sorting 3) feature generation and/or selection and 4) answering yes/no feature questions Intensity: 2x/week, 120 min, 10 weeks	78.85(6.06) 81.98(8.77) 3.13	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Lesser, Bryan, Anderson, & Hilton, 1986	13; 9; M = 3; F = 6	60.00(10.83) 40-76	Broca's = 5 Conduction = 4	Mild-to-Mod. = 3 Mod. = 4 Mod.-to-sev. = 2	15.56 2-33	Type: INT Description: Language Enrichment Therapy (LET): 160 basic words were pictured in line drawings in sets of eight within language tasks of increasing complexity from picture-matching to understanding a text (28 units of complexity). Each unit repeated the same exercise 20 times with different vocabulary. Exercises involve comprehension, repetition, naming, constructing sentences, reading and writing. Spouse/volunteer can use materials with PWA between therapy visits. LET was supplemented with conversation and counseling. Intensity: 1x/week, 60 min, 10-12 weeks	59.09(11.58) 65.60(14.79) 6.51	Level of Evidence: IIB/ class III Study protocol: + Blinding: + Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Macauley, 2006	3; 3; M = 3	63.00(4.00) 59-77	Nonfluent = 3	Mild-to-Mod. = 3 Mod. = 1	72 48-84	Type: INT Description: Traditional Therapy 1) PWA asked to name a picture 2) SLP asks for a phrase using the word Animal-assisted therapy: 1) Stimuli cards were arranged throughout the room with dog treats on them 2) PWA asks dog to "find treat" 3) SLP picks up card from dog who just ate the treat and asks client to name it. SLP asks PWA to tell dog phrase containing the target word. 4) Dog shakes hand or barks to say "well done" when the PWA says it accurately. All PWA had both treatments. Intensity: 1x/week, 30 min, 24 weeks	74.37(10.65) 75.40(8.73) 1.03	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Marshall, Laures-Gore, DuBay, Williams, & Bryant, 2015	3; 3; M = 1; F = 2	58.00(13.89) 49-74	Broca's = 2 Global = 1	Mod. = 1 Mod.-to-sev. = 2	18.33 12-22	Type: INT Description: PWA received conventional speech therapy while also practicing unilateral nostril breathing techniques (i.e., diaphragmatic breathing and close nostril on their affected side, inhale through the open nostril and exhale for twice as long than their inhalation). Intensity: 2x/week, 40 min, avg. 14 weeks (14-18 weeks)	38.33(12.52) 40.63(6.75) 2.30	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Milman, Clendenen, & Vega-Mendoza, 2014a	3; 3; M = 3	N/A(N/A) 56-68	Nonfluent = 3	Mod. =1 Mod.-to-sev. = 2	n/a 12-84	Type: INT Description: Functional use of adjectives to describe people in four different tasks: 1) single-word adjective production 2) single-word pronoun production 3) sentence training and 4) discourse production. Semantic, orthographic and phonemic cues were given to facilitate single word use. Intensity: 4x/week, 60 min, avg. 9 weeks (5-12 weeks)	43.70(8.75) 51.40(16.41) 7.70	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Milman, Vega-Mendoza, & Clendenen, 2014b	3; 3; M = 1; F = 2	62.33(6.35) 55-66	Non-fluent = 3	Mild-to-Mod. = 1 Mod.-to-sev. = 2	41 22-61	Type: INT Description: Each individual session targeted: 1) word retrieval 2) sentence production and 3) discourse-level communication to integrate training received in steps 1 and 2. Daily homework was assigned focusing on material from steps 1 and 2. Group session once weekly to transfer skills from individual therapy to conversational level. Intensity: 4x/week, 60 min, avg. 11 weeks (6-18)	47.07(27.67) 52.67(26.37) 5.60	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Mozeiko, Coelho, & Myers, 2016_Intensive	4; 4; M = 2; F = 2	54.50(20.63) 26-72	Broca's = 2 Not classifiable = 1 Global = 1	Mild-to-Mod. = 1 Mod.-to-sev. = 2 Sev. = 1	65.4 18-134	Type: A/P Description: Intensive Constraint Induced Language Therapy (CILT) (i.e., 5x/week): PWA participated in a Go Fish game wherein they had to ask one another for a card that matches one of their own. SLP increases the difficulty level by accepting different responses: Level 1) single word response with high frequency cards and Level 2) introduces a carrier phrase to the single word 3) adds an adjective to the carrier phrase with a single word response 4) adds two adjectives to the carrier phrase with a single word response. Intensity: 5x/week, 180 min, 2 weeks	38.05(20.00) 46.35(20.97) 8.30	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Mozeiko, Coelho, & Myers, 2016_Distributed	4; 4; M = 3; F = 2	59.50(13.50) 47-77	Broca's = 1 Anomic = 1 Conduction = 1 Not classifiable = 1	Mild-to-Mod. = 1 Mod. = 1 Mod.-to-Sev. = 2	36 13-96	Type: A/P Description: Distributed Constraint Induced Language Therapy (CILT) (i.e., 3x/week) PWA participated in a Go Fish game wherein they had to ask one another for a card that matches one of their own. SLP increases the difficulty level by accepting different response Level 1) single word response with high frequency cards and Level 2) introduces a carrier phrase to the single word 3) adds an adjective to the carrier phrase with a single word response 4) adds two adjectives to the carrier phrase with a single word response. Intensity: 3x/week, 60min, 10 weeks	59.20(24.72) 62.08(23.19) 2.88	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Purdy & Wallace, 2015	3; 3; M = 3	53.33(12.22) 40-64	Broca's = 3	Mod.-to-sev. = 1 Sev. = 2	26.67 10-48	Type: 1 Description: 1) Multimodality training of nouns and 2) training communicative use of the targets (i.e., Promoting Aphasic's Communication Effectiveness (PACE) (Davis & Wilcox, 1985) Intensity: 5x/week, 120-180 min, 2 weeks	22.27(4.97) 25.63(2.83) 3.37	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Raymer, Kohen, & Saffell, 2006a	5; 5; M = 2; F = 3	70.80(12.11) 51-82	Conduction = 2 Broca's = 2 Mixed = 1	Mild-to-Mod. = 2 Mod.-to-sev. = 3	18.4 4-42	Type: I Description: MossTalk Words (i.e., computer-assisted treatment program). PWA completed multi-modal matching exercises involving 1) spoken plus written word to picture matching 2) spoken word to picture matching 3) written word to picture matching Intensity: 1-2x/week, 60 min, 6-12 weeks, then, 3-4x/week, 60 min 3-4 weeks. 4 week break in between each 12-hour tx. phase.	53.32(19.14) 57.40(17.26) 4.08	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Raymer, Singletary, et al., 2006b	9; 9; M = 6; F = 3	60.67(9.08) 49- 70	Broca's = 6 Wernicke's = 2 Conduction = 1	Mild-to-Mod. = 1 Mod. = 4 Mod.-to-sev. = 3 Sev. = 1	29 5-62	Type: I Description: Gesture-Verbal Treatment (GVT): 1) SLP showed the picture and modeled the target word and a gesture. 2) PWA produced word and gesture three times 3) SLP showed gesture in isolation and participant imitated three times 4) SLP presented the target and PWA repeated it three times 4) After a 5-second delay, SLP prompted participant to show and tell them what happened in the picture. Intensity: 3-4x/week, 60 min, 10 weeks	47.64(16.89) 52.43(15.46) 4.79	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Raymer et al., 2012	8; 8; M = 4; F = 4	58.13(14.30) 40-79	Broca's = 4 TMA = 2 TSA = 1 Wernicke's = 1	Mild-to-Mod. = 1 Mod. = 7	13.5 5-30	Type: I Description: Errorless Naming: 1) SLP modeled the picture name and PWA repeated 2) SLP showed the written word and PWA read it aloud three times 3) Written word was removed and PWA was given 5 seconds to hold onto it 4) SLP prompted PWA to name it again. Gestural Facilitation: 1) SLP modelled the name and a related gesture 2) SLP modelled the gesture alone for SLP to imitate three times 3) SLP modelled name and PWA repeated three times 4) Clinician modelled gesture while showing the picture 5) After 5 second delay SLP prompted PWA to provide name and gesture again. Intensity: 2-3x/week, 60 min, 10 weeks	56.91(5.43) 63.40(11.46) 2.50	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Rider, Wright, Marshall, & Page, 2008	3; 3; M = 2; F = 1	63.33(9.07) 55-73	Nonfluent = 3	Mild-to-Mod. = 2 Mod. = 1	65.67 26-126	Type: I Description: Trained words related to 6-8 contexts (i.e., story retell and procedural narratives) using SFA (e.g., Boyle, 2004 Boyle & Coelho, 1995) Intensity: 2-3x/week, 60 min, 7-14 weeks	72.30(5.71) 73.43(8.00) 1.13	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Rodriguez, Raymer, & Rothi, 2006	4; 4; M = 3; F = 1	65.00(9.76) 52-73	Conduction = 2 Wernicke's = 1 Broca's = 1	Mild-to-Mod. = 1 Mod. = 1 Mod.-to-sev. = 2	34.25 8-96	Type: I Description: All PWA received both verb naming treatments. Gesture-Verbal Treatment (GVT): 1) SLP showed the picture and modeled the target word and a gesture. 2) PWA produced word and gesture three times 3) SLP showed gesture in isolation and PWA imitated three times 4) SLP presented the target and PWA repeated it three times 4) After a 5-second delay, SLP prompted participant to show and tell them what happened in the target picture. Semantic-Phonologic Treatment: 1) SLP showed PWA the picture and modeled the target word 2) PWA answered semantic and phonologic questions about the target 3) PWA produced the target three times 4) After a 5-second delay, PWA attempted to explain what was happening in the picture. Intensity: 2-3x/week, 60 min, 10-14 weeks	53.40(18.00) 56.45(20.18) 3.05	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Rose, Attard, Mok, Lanyon, & Foster, 2013	11; 11; M = 6; F = 5	58.09(10.63) 39-74	Broca's = 6 Anomic = 4, Conduction = 1	Mild = 2 Mild-to-Mod. = 2 Mod. = 6 Mod.-to-sev. = 1	44 17-88	Type: A/P Description: PWA targeted word retrieval in small groups through treatment activities including (i.e., Go Fish, Memory, Request Role plays, Board games, rapid naming while playing snap, Who am I) In CIAT Plus: Verbal production was the goal but cueing was provided as needed (i.e., phonemic cue, written cue). In multi-modal aphasia therapy (M-MAT): Verbal production was also the goal but, multi-modal cueing was provided (i.e., gesture, drawing, written model, verbal model). All PWA received both treatments. Intensity: 4x/week, 195 min, 2 weeks	66.26(18.29) 70.78(16.55) 4.52	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Sandberg, Bohland, & Kiran, 2015	10; 10; M = 3; F = 7	59.40(10.01) 47-75	Anomic = 6 Conduction = 2 Broca's = 1 TCM = 1	Above cut-off = 3 Mild = 1 Mild-to-Mod. = Mod.-to-sev. =	55.7 7-134	Type: I Description: PWA were trained on ten abstract words in a particular context category (e.g., courthouse) and ten untrained concrete words from the same context-category were monitored to measure generalization. Treatment steps included 1) Feature selection 2) Abstract/concrete lexical decision 3) Synonym generation Intensity: 2x/week, 120 min, 10 weeks	80.52(17.41) 84.32(15.00) 3.80	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Schneider & Thompson, 2003	7; 6; N/A	N/A(N/A) N/A	Broca's	Mild-to-Mod. = 5 Mod. = 1	N/A 39-132	Type: I Description: Semantic verb retrieval treatment or argument structure verb retrieval treatment was applied to a category of verbs. Semantic treatment focused on the meaning of verb and argument structure focused on number of argument structures pertaining to the verb and its thematic role assignment. Treatment involved 3 steps: 1) Presentation of the item 2) Presentation of the meaning or thematic role information for the verb being trained 3) PWA names the item. Intensity: 24 sessions	72.43(6.44) 76.60(4.39) 4.17	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Silkes, 2015	4; 4; N/A	60.25(1.26) 49-60	Nonfluent = 1 Fluent = 3	Mild=1 Mild-to-Mod. = 3	58.5 24-96	Type: I Description: Masked repetition priming treatment: Each section PWA saw prime-picture pair 16 times and had four opportunities to name each picture. PWA were instructed to watch the screen and try to name the picture when they saw it for the 4th time. Intensity: 2x/day XX 12 days	75.13(9.56) 76.33(6.98) 1.20.00	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Steele, Baird, McCall, & Haynes, 2014	9; 9; M = 7; F = 2	61.44(10.42) N/A	Broca's = 5 TCM = 1 Wernicke's = 1 Isolation = 1 Conduction = 1	Mod.	66.72 16-230	Type: INT Description: Individual therapy (i.e., improving conversational skills using script training, sentence patterning and response elaboration), group therapy (i.e., word retrieval, improve speech intelligibility, train social exchanges, train longer and more complex sentences, increase conversational turns, improve well-being, increase life participation)and online language exercises (i.e., Talk Path: listening, speaking, reading and writing activities) Intensity: 2x/week 60 min 20.6 weeks	53.90(9.40) 57.40(10.40) 3.50	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: +

								Precision: + Intention to treat: N/A
Thompson, Shapiro, Kiran, & Sobecks, 2003	4;4; N/A	N/A(N/A) N/A	Broca's = 4	Mild-to-Mod. = 2 Mod. = 2	N/A 12-132	Type: I Description: Trained to comprehend & produce different sentence Types using Treatment of Underlying Forms (Thompson, 2001) Intensity: 2x/week 120 min 3-9 weeks	66.20(5.51) 68.38(7.04) 2.175.00	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Waller, Dennis, Brodie, & Cairns, 1998	4; 3; M = 2; F = 1	62.33(10.21) 55-74	Nonfluent = 3	Mod. = 2 Sev. = 1	31.56 15-78	Type: INT Description: PWA were trained to retrieve pre-programmed items in their TalkBac (i.e., word-based AAC device with personal sentences and stories) by SLP. Trained caregivers provided opportunities to elicit those phrases and SLP visited weekly to provide support. Three group sessions were organized to allow caregivers and subjects to meet and discuss pros and cons of the project. Intensity: 1x/week 90 min 52 weeks	38.77(28.34) 45.77(31.88) 7.00	Level of Evidence: III/ class IV Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Wilson et al., 2012	9;9; M = 8; F = 1	52.22(9.73) 28-62	Anomic = 5 Nonfluent = 2 Global = 1 Mixed = 1	Above cut-off = 1 Mild = 3 Mild-to-Mod. = 2 Mod. = 1 Mod.-to-sev. = 1 Sev.= 1	22.68 6-66	Type: INT Description: PWA participated in Intensive Residential Aphasia Communication Theraprogram (InteRACT Carey et al. 2006). Five hours of daily treatment included focus on speech and language skills, functional communication strategy usage, community re-integration and communication partner training. Intensity: 5x/week 300 min 4 weeks	69.91(28.85) 76.09(25.25) 6.18	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation: C Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Supplementary Material 5: Demographic information for within group studies using Communicative Effectiveness Index

Note: M=Male; F = Female; TCM = transcortical motor; TSM = transcortical sensory; sev. = severe; I = Impairment-based treatment; A/P = activity/participation-based treatment; INT = integrated treatment; st. = standardized; CS = convenience sample

Study Name	Study N; N for outcome measure; Sex	Mean Age(SD) range	Aphasia Type	Aphasia Severity (WAB-AQ)	Mean MPO range	Treatment(Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Methodological Rigor
Aftonomos, Appelbaum, & Steele, 1999	60; 29; M=35; F=25	68.60(12.30) 24-86	Broca's= 21 Anomic = 13 Global = 11 Wernicke's = 8 Conduction = 3 TCM = 2 TSM = 1 Isolation=1	Mod.-to-sev.	24.6 .24-144	Type: INT Description: Individual treatment using the Lingraphica (icon-based language system) to provide therapeutic exercises at the appropriate level for participants' severity. Also, focused on improving functional communication outside of the clinic as well as provided home exercises. Intensity: 2x/week, 60 min, 20. 5 weeks	42.80(19.00) 62.60 (18.60) 19.80	Level of Evidence: IIB/clas: III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Archibald, Orange, & Jamieson, 2009	8; 3; M=2; F=1	77.67(9.02) 69-87	Broca's=1 Anomic =1 Global =1	Mod.=1 Mod.- to-sev. =2	44.66 10-105	Type: I Description: Computer-provided treatment via AphasiaMate across 8 modules (i.e., auditory comprehension, visual matching, reading comprehension, spelling, semantics, sentence processing). Patients used computer at home or in clinic with trained personnel. Intensity: 1x/week, 60 min, 15 weeks	41.67(3.79) 51.67(6.66) 10	Level of Evidence: IIB/clas: III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Babbitt, Worrall, & Cherney, 2015	74;74; M=52; F=22	54.10(16.30) 18-86	Nonfluent = 49 Fluent = 25	Mod.	15.5 3-87	Type: INT Description: Intensive Comprehensive Aphasia Program (ICAP): two individual therapy sessions and one session each of constraint-induced language therapy (CILT), reading/writing, computers and conversation group for six hours of daily programming. Intensity: 5x/week, 240 min, 4 weeks	46.80(15.70) 58.20(16.20) 11.4	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Barthel, Meinzer, Djundja, & Rockstroh, 2008	12; 12; M=5; F=7	55.20(14.20) 35-76	Broca's=8 Anomic=1 Global=1 Non-standard=2	Mod.-to-sev.	64 13-156	Type: INT Description: Model-oriented aphasia therapy (MOAT) was provided on an individual basis. It combines model-oriented aphasia therapy (i.e., target semantic system), linguistic approach (i.e., target phonological errors), strategy approach (i.e., paraphrasing), communicative approach (i.e., role playing) and involvement of relatives. Intensity: 1x/day, 180 min, 10 days	42.60(21.30) 51.80(20.90) 9.20	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Code, Torney, Gildea-Howardine, & Willmes, 2010	8; 7; M=6; F=1	52.71(13.40) 36-73	Broca's= 3 Global= 2 Wernicke= 1 Amnesic= 1	Mod.	34.43 9-70	Type: INT Description: Individual and group therapy was administered based on participants' pre-treatment testing results. Weekly counseling was offered to caregivers & participants. Intensity: 5x/week, 4 weeks	45.00(10.10) 57.50(24.10) 12.50	Level of Evidence: IIB/class III Study protocol: - Blinding: + Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Edmonds, Mammino, & Ojeda, 2014	11; 9; M=6; F=4	63.30(13.07) 35-81	Anomic=5 Conduction=2 TCM=2 Wernicke's=1	Mod.	57.5 14-144	Type: I Description: Verb Network Strengthening Treatment (VNeST): PWA were given a verb then, asked to retrieve related agents and patients. They are encouraged and supported to generate multiple pairs of agents and patients for each verb. Intensity: 2x/week, 120 min, 10 weeks	32.61(9.70) 65.28(11.20) 32.67	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Johnson, Hough, King, Vos, & Jeffs, 2008	3; 3; M=1; F=2	67.67(10.07) 57-77	Broca's =2 Mixed =1	Mod.=2 Sev. = 1	52.68 27-93	Type: INT Description: Intensive therapy using computer-based augmentative alternative communication (AAC) (i.e., symbol identification, navigation, scenario role play, sentences). It involved training caregiver in therapy and use of an AAC device to reduce the severity of the impairment and increase activities and participation. Intensity: 3-4x/week, 60 min, 12 weeks	26.27(13.49) 38.93(3.09) 12.66	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Milman, Vega-Mendoza, & Clendenen, 2014	3;3; M=1; F=2	62.33(6.35) 55-66	Nonfluent=3	Mod.=2	41 40-66	Type: INT Description: Each individual session targeted: 1) word retrieval 2) sentence production and 3) discourse-level communication to integrate training received in steps 1 and 2. Daily homework was assigned focusing on material from steps 1 and 2. Group session once weekly to transfer skills from individual therapy to conversational level. Intensity: 4x/week, 60 min, avg. 9 weeks (5-12 weeks)	48.77(10.46) 49.83(14.91) 1.07	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Nickels & Osborne, 2016	4; 4; M=3; F=1	59.75(18.66) 34-74	Global= 2 Anomic= 1 TCS= 1	Mild-to-Mod.= 1 Mod.=1 Mod.-to-sev.= 2	25.8 15-42	Type: A/P Description: Constraint Induced Aphasia Therapy Plus (CIAT-plus): Therapy addressed verbal expression through Go Fish. 1) Volunteer played the game with two PWA. 2) PWA chose a card and asked the other players for a card. 3) Co-player then responded. PWA could use multi-modal communication, as needed. Shaping was included to increase the complexity of their verbal responses. Intensity: 2x/week, 90 min, 4 weeks	61.75(11.27) 61.00(11.60) -.75	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Raymer et al., 2012	8; 6; M=2; F=4	60.33(14.49) 47-79	Broca's= 3 TMA =1 TSA =1 Wernicke's= 1	Mild= 1 Mild-to-Mod.= 2 Mod.=2 Mod.-to-sev.= 1	14 5-30	Type: I Description: Errorless Naming: 1) SLP modeled the picture name and PWA repeated 2)SLP showed the written word and PWA read it aloud three times 3)Written word was removed and PWA was given 5 seconds to hold onto it 4) SLP prompted PWA to name it again. Gestural Facilitation: 1) SLP modelled the name and a related gesture 2) SLP modelled the gesture alone for SLP to imitate three times 3) SLP modelled name and PWA repeated three times 4) Clinician modelled gesture while showing the picture 5) After 5 second delay SLP prompted PWA to provide name and gesture again. Intensity: 2-3x/week, 60 min, 10 weeks	64.37(19.91) 59.27(20.42) - 5.09	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Rodriguez et al., 2013	11;9; M=4; F=4	60.45(17.67) 18-79	N/A	Mod.-to-sev.	25.81 8-56	Type: INT Description: Individual treatment involved both impairment-based and functional therapy. PWA and family members were involved in group treatment (i.e., share information about available local services, facilitate discussions about "living with aphasia" , promoting social interaction and multi-modal communication) Computer-based therapy (i.e., Bungalow, REACT, Speech Sounds on Cue) Challenge Task: specific goal each PWA wanted to achieve by the end of the program. Intensity: 5x/week, 240 minutes, 2 weeks OR 5x/week, 300 minutes, 4 weeks	41.60(15.50) 55.30(16.60) 13.70	Level of Evidence: III/class IV Study protocol: + Blinding: + Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Rose, Attard, Mok, Lanyon, & Foster, 2013	11;10; M= 5; F = 5	59.30(10.37) 39-74	Broca's = 5 Anomic = 4 Conduction = 1	Mild - 1 Mild-to-Mod. - 2 Mod. - 3 Mod.-to-sev. - 4	46.21 7-88	Type: A/P Description: PWA targeted word retrieval in small groups through treatment activities including (i.e., Go Fish, Memory, Request Role plays, Board games, rapid naming while playing snap, Who am I) In CIAT Plus: Verbal production was the goal but cueing was provided as needed (i.e., phonemic cue, written cue). In multi-modal aphasia therapy (M-MAT): Verbal production was also the goal but, multi-modal cueing was provided (i.e., gesture, drawing, written model, verbal model). All PWA received both treatments. Intensity: 4x/week, 195 min, 4 weeks	53.00(22.13) 62.29(20.52) 9.29	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Sorin-Peters & Behrmann, 1995	3;3; M=2; F=1	69.33(3.06) 66-72	Fluent =3	Mild=1 Mild-to-Mod.=1 Mod.=1	5 3-7	Type: INT Description: Individual Therapy goals: Targeted the impaired process and taught PWA to compensate using non-verbal techniques with the overall goal of increasing PWAs' participation in the community and their conversational skills. Group Therapy goals: Gave PWA the opportunity to use compensatory strategies in a more a natural setting. Individual goals were incorporated into group discussion. PWA also participated in groups at the Day Treatment Center, which were led by nursing, recreational therapy, occupational therapy and social work personnel that were trained to use compensatory strategies with PWA. Intensity: 2x/week, 60 min, avg. 22.14 weeks (4-6.5 mos)	72.00(13.45) 69.67(20.13) -2.33	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Steele, Baird, McCall, & Haynes, 2014	9; 8; M= 6; F = 2	60.75(10.91) 43-77	Broca's = 4 Conduction = 1 TCM = 1 Isolation = 1 Wernicke's = 1	Mod.	65.85 16-230	Type: INT Description: Individual therapy (i.e., improving conversational skills using script training, sentence patterning and response elaboration), group therapy (i.e., word retrieval, improve speech intelligibility, train social exchanges, train longer and more complex sentences, increase conversational turns, improve well-being, increase life participation)and online language exercises (i.e., Talk Path: listening, speaking, reading and writing activities) Intensity: 2x/week, 60 min, 20.6 weeks	49.90(18.60) 67.70(13.60) 17.80	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

van der Gaag et al., 2005	22; 14; M=6; F=16	58.00(13.40) 31-81	N/A	Mod.	Chronic N/A	Type: INT Description: Group therapy (i.e., conversation, communication skills, art, discussion, self-advocacy, monitoring communication skills of conversation partners) Intensity: 1x/week, 120 min, 7 weeks	48.40(20.43) 58.10(19.85) 9.70	Level of Evidence: IIB/class III Study protocol: + Blinding: + Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Wambaugh, Wright, & Nessler, 2012	6; 6; M=4; F=2	57.83(8.26) 46-70	Nonfluent = 5 Fluent =1	Mild=1 Mild-to-Mod. = 3 Mod. = 2	44.5 19-96	Type: A/P Description: PWA received treatment in two picture Description contexts (i.e., "Tell me about the picture") and one personal recount context (i.e., "Tell me something about anything you would like to talk about.") Intensity: 2-3x/week, 6 weeks	40.83(8.13) 48.33(10.46) 7.50	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Wilson et al., 2012	9;8; M= 7; F=1	51.38(10.04) 28-62	Anomic=5 TCM=1 Conduction=1 Broca's=1	Mild-to-Mod. = 2 Mod. = 4 Mod.-to-sev. =1 Sev. = 1	17.16 6-36	Type: INT Description: PWA participated in Intensive Residential Aphasia Communication Theraprogram (InteRACT Carey et al. 2006). Five hours of daily treatment included focus on speech and language skills, functional communication strategy usage, community re-integration and communication partner training. Intensity: 5x/week, 60 min, 4 weeks	53.63(16.41) 65.25(18.13) 11.63	Level of Evidence: IIA/class II Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Supplementary Material 6: Demographic information for within group studies using Boston Naming Test

Note: M=Male; F = Female; TCM = transcortical motor; TSM = transcortical sensory; sev. = severe; I = Impairment-based treatment; A/P = activity/participation-based treatment; INT = integrated treatment; st. = standardized; CS = convenience sample

Study Name	Study N; N for outcome measure; Sex	Mean Age(SD) range	Aphasia Type	Aphasia Severity (WAB-AQ)	Mean MPO range	Treatment(Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Methodological Rigor
Aftonomos, Steele, & Wertz, 1997	23;10; M=7; F=3	62.20(10.62) 49-77	Anomic = 3 Wernicke's=2 Broca's=4 Conduction =1	Mild = 3 Mod. = 5 Sev. = 2	40.8 9-80	Type: INT: Description: Individual treatment to familiarize PWAs with their Lingraphica (LG) system and improve their performance in areas of weakness. Group treatment for 3 PWA involved PWAs using their LGs to respond to one another with a PACE treatment. PWA assigned exercises for home practice. Intensity: 1.96x/week, 60 min, avg. 14.1 weeks	23.00(12.03) 34.10(16.70) 11.10	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Babbitt, Worrall, & Cherney, 2015	74;74; M = 52; F = 22	54.10(16.30) 18-86	Nonfluent = 49 Fluent = 25	Mod.	15.5 3-87	Type: INT Intensive Comprehensive Aphasia Program (ICAP): two individual therapy sessions and one session each of constraint-induced language therapy (CILT), reading/writing, computers and conversation group for six hours of daily programming. Intensity: 5x/week, 360 min, 4 weeks	16.60(19.00) 20.70(20.50) 4.10	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Breier, Maher, Novak, & Papanicolaou, 2006	6;6; M=4; F=2	61.33(8.80) 53-77	Broca's=5 Conduction =1	Above =2 Sev. =2 Mod. =1	47 21-70	Type: A/P Description: Constraint Induced Language Therapy (CILT) = Only verbal expression was accepted and multi-modality communication was restricted, even self-cueing. Treatment was conducted in dyads and consisted of a dual card task with barrier present (i.e., PWA took turns requesting a card or responding another's request). Stimuli included four sets of cards of different semantic categories with two levels of difficulty (i.e., low- and high-frequency). Clinicians used shaping (i.e., increasing communicative demands of request/response from single words to lengthier sentences) and cueing for a successful production (i.e., semantic, phonemic, repetition). Intensity: 4x/week, 180 min, 3 weeks	24.00(24.46) 23.00(24.54) - 1.00	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Edmonds & Kiran, 2006	3 ;3; M=1; F=2	54.00(1.73) 53-56	n/a	Mild=1 Mod. =1 Sev. =1	8.66 8-9	Type: I Description: Semantic feature analysis-based (SFA-based) treatment (Boyle & Coelho, 1995 Kiran & Thompson, 2003) involving the following steps: 1) initial naming attempt 2) written feature verification 3) yes/no feature questions 4) second naming attempt. Treatment was administered in both languages. Intensity: 2x/week, 120 min 7-34 weeks	22.23(20.02) 38.87(8.21) 16.63	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Edmonds, Nadeau, & Kiran, 2009	4; 4; M=1; F=3	61.50(10.08) 52-75	TMA=2 Conduction=2	Mild= 2 Mod.= 2	37.25 10-96	Type: I Description: Verb Network Strengthening Treatment (VNeST): 1) PWA were given a verb. 2) Asked to produce 3-4 thematic role pairs. 3) Picked a thematic role pair and answered wh-questions about it. Intensity: 2x/week, 120 min, avg. 4.75 weeks (4-6 weeks)	36.50(11.24) 44.50(9.40) 8.00	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Falconer & Antonucci, 2012	4; 4; M=3; F=1	45.75(15.09) 31-62	Conduction=2 Broca's=1 TCM=1	Mod.=1 Sev.=3	86.99 24-156	Type: INT Description: Modified Promoting Aphasics' Communication Effectiveness (PACE) approach: Within a small group, PWA took turns describing stimuli hidden from others with enough detail for others to guess the item) When word-retrieval difficulty occurred, the activity was briefly discontinued while PWA were led through the SFA chart (Boyle,2004) until they accessed the target. HW assignments included describing difficult-to-name pictured objects using SFA outside of treatment sessions. Intensity: 2x/week, 90-120 min, 7 weeks	9.00(8.29) 11.75(10.90) 2.75	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Ferguson, Evans, & Raymer, 2012	4;4; M=2; F=2	57.75(14.20) 40-74	Broca's=2 Conduction = 1 TCM=1	Above = 1 Mild = 1 Sev. = 2	34.75 22-41	Type: I Description: Intention Gesture Treatment (IGT): 1) Participants generated L-hand gesture and pressed button to view target noun then, attempted to name. 2) If they were inaccurate, the SLP modeled the gesture and noun together and participant imitated 4-6 times. 3) SLP modeled again and PWA rehearsed gesture and verbal production 4-6 times. 4) PWA re-attempted to produce the target noun after producing gesture and pressing the red button. Pantomime Gesture treatment (PGT)) 1) PWA were trained to produced pantomime gestures. 2) SLP pushed button to change picture, then PWA attempted to name. 3) If they were inaccurate, SLP produced gesture and verbal model of target and PWA imitated 4-6x. 4) SLP modeled again and participant practiced the gesture and verbal target again. 5) They re-attempted production of the target after SLP pressed button. Intensity: 2-3x/week, 45-60 min, 9-11 weeks	26.75(25.18) 29.50(27.09) 2.75	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Fridriksson, Morrow-Odom, Moser, Fridriksson, & Baylis, 2006	3 ;3; M=3	59.00(10.82) 47-68	Broca's = 2 Anomic = 1	Mild = 1 Sev. = 2	60 24-144	Type: I Description: A combination of spaced retrieval, errorless learning and massed practice techniques were used to treat naming. Target items were selected by participants. Treatment was administered in a group setting. PWA and clinicians played board games and took turns working on naming in between turns in the game. Intensity: 7x/week, 240 min, 2 weeks	13.67(22.81) 14.33(21.39) .67	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Kendall et al., 2008	10;10; M=6; F=4	52.40(11.40) 40-76		Mild=6 Mod.=1 Sev.=3	59.7 16-120	Type: I Description: Phonologically-based treatment: 1)Trains subjects on individual phonemes and 2) Trains phonological and orthographic sequence knowledge at the syllable level. Intensity: 4x/week, 120 min, 12 weeks	30.10(13.47) 33.70(12.61) 3.60	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Kendall, Raymer, Rose, Gilbert, & Gonzalez Rothi, 2014	8;8; M=4; F=4	62.00(9.65) 46-72	Mild = 6 Mod. = 1 Severe = 1		63.13 11-120	Type I Description: Naming pictures with semantic, phonologic, repetition and orthographic cueing hierarchy including a delayed-recall step. Intensity: 5x/week, 120 min, 6 weeks	30.63(12.72) 30.75(14.05) .13	Level of Evidence: III/class IV Study protocol: + Blinding: + Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Kendall, Oelke, Brookshire, & Nadeau, 2015	26 ;26; M=15; F=11	56.04(14.53) 26-78	No aphasia=5 Mild=6 Mild-to-Mod.=9 Mod.=5 Mod.-to-severe=1		47.5 8-211	Type: I Description: Multimodal, phonologically-based therapy using phonemes in isolation and one-, two-, and three-syllable sequences in real words and nonword combinations. More specifically, Stage 1) targeted sounds in isolation and Stage 2) targeted sounds in syllables. Each stage involves an overview, introduction of sounds and sound sequences, perception tasks and production tasks. Intensity: 5x/week, 120 min, 6 weeks	34.34(18.11) 37.61(16.17) 3.27	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Kiran & Thompson, 2003	4;4 F=3; M=1	68.50(5.92) 63-75	Fluent =4	Sev. = 4	33.75 9-99	Type: I Description: Typicality-based SFA treatment involving 1) Naming 2) Category Sorting 3) Feature Verification 4) Answering yes/no questions Intensity: 2x/week, 120 min, 17-35 weeks	6.45(2.34) 13.76(6.99) 7.31	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, 2005	3;3; M=3	63.67(4.16) 59-67	TCM =1 Broca's = 1: Anomic = 1	Mild = 1 Mod. = 1 Sev. = 1	156 24-288	Type: I Description: Phoneme-to-grapheme conversion: 1) writing to dictation of the word 2) copying the word 3) oral reading of the word 4) selecting and writing the sounds of the target 5) writing phonemes of the target word presented aloud 6) writing to dictation of the word Intensity: 2x/week, 120 min, 5-10 weeks	23.02(16.52) 28.00(12.51) 4.98	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran & Johnson, 2008	3 ;3; M=2; F=1	62.33(11.15) 54-75	Anomic=3	Mild =1 Mod. =1 Sev. =1	18 7-36	Type: I Description: Typicality-based SFA treatment 1) Naming the picture 2) sorting pictures of target category 3) selecting written features for the target 4) answering written yes/no questions 5) naming the picture Intensity: 2x/week, 120 min, 8-15 weeks	32.54(16.29) 41.54(7.05) 9.00	Level of Evidence: III/class IV Study protocol: - Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Kiran, 2008	5;5; M=1; F=4	58.40(12.03) 47-77	Conduction =3 Broca's=2	Mod.=2 Sev.=3	8.2 7-10	Type: I Description: SFA-based treatment involved 1) naming the picture 2) sorting pictures by category 3) identify semantic features 4) answer yes/no feature questions Intensity: 2x/week, 120 min, 24 weeks	14.00(9.06) 27.00(13.56) 13.00	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, Sandberg, & Abbott, 2009	4 ; 4; M=2; F=2	56.75(15.63) 39-77	Anomic=4	Mild=3 Sev. =1	25.5 8-43	Type: I Description: SFA-based treatment involving: 1) category sorting 2) feature selection 3) yes/no feature questions 4) word recall and 5) free generative naming. Intensity: 2x/week, 120 min, avg. 12 weeks (6-19)	36.51(15.48) 37.50(11.62) .99	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Kiran, Sandberg, & Sebastian, 2011	6 ;6; M=3; F=3	68.00(15.76) 39-84	Anomic=4 Conduction=2	Mild=2 Mod.=1 Sev.=3	43.16 6-108	Type: I Description: SFA-based treatment involving 1) category generation 2) category sorting 3) feature generation and/or selection and 4) answering yes/no feature questions Intensity: 2x/week, 120 min, 10 weeks	23.50(12.21) 24.16(13.02) .66	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Kurland, Wilkins, & Stokes, 2014	8;5; M=2; F=3	67.60(8.26) 58-80	Anomia = 3 Transcortical sensory =1 Wernicke =1	Mild = 4 Mod. = 1	44 17-84	Type: INT Description: Home practice implemented after two weeks of intensive language therapy (ILAT) or modified version of Promoting Aphasic Communicative Effectiveness (PACE). Each participant received two individualized iBook (i.e., objects and actions) to practice at home. Daily practice involved 20 words. Each word had a chapter with five interactive pages in the iBook targeting it. They also met with the SLP once weekly for informal conversation and trouble-shooting. Intensity: 5-6x/week, 20 min, 26 weeks	39.60(10.24) 37.40(11.72) -2.20	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Lacey, Lott, Snider, Sperling, & Friedman, 2010	6; 3; F=3	56.00(15.39) 39-69	Anomic = 3	Mild = 1 Mod. = 2	54.33 13-114	Type: I Description: Multiple Oral Re-reading Treatment: 1) Read text passages three times aloud 2) Re-read words on which they made mistakes. Clinician read the word aloud for them if they could not. PWA re-read the whole sentence if they made so many errors that the sentence flow was disrupted. They were instructed to call the SLP daily and read the passage aloud over the phone. They also read it 5 times at home daily without assistance. Intensity: 1x/week, 60 min, 8 weeks	26.33(7.51) 33.67(3.79) 7.33	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
MacGregor, Difrancesco, Pulvermüller, Shtyrov, & Mohr, 2015	12;12; M=9; F = 3	57.00(15.64) 26-76	Non-fluent	Mod.	81.58 17-234	Type: A/P Description: Intensive Language Action Therapy (ILAT): Treatment involved language games (i.e., making requests) to improve their language and communication. Treatment stimuli included cards depicting scenes/objects. Verbal expression was encouraged and non-verbal communication was discouraged. Intensity: 1x/day, 180-240 min, 10 days	28.58(4.86) 33.00(4.22) 4.42	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Milman, Clendenen, & Vega-Mendoza, 2014	3;3; M=3	N/A(N/A) 56-68	Broca's = 3	Sev.	12-84	Type: INT Description: Functional use of adjectives to describe people in four different tasks: 1) single-word adjective production 2) single-word pronoun production 3) sentence training and 4) discourse production. Semantic, orthographic and phonemic cues were given to facilitate single word use. Intensity: 4x/week, 60 min, avg. 11 weeks (6-18)	16.33(11.37) 22.67(8.50) 6.33	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Mohr, Diffrancesco, Harrington, Evans, & Pulvermüller, 2014	8; 8; M=7; F = 1	62.38(12.75) 41-76	Nonfluent	Mild = 3 Mod. = 1 Sev. = 4	87 17-234	Type: A/P Description: Intensive Language Action Therapy (ILAT): Treatment involved language games (i.e., making requests) to improve their language and communication. Treatment stimuli included cards depicting scenes/objects. Verbal expression was encouraged and non-verbal communication was discouraged. Intensity: 1x/day, 180 min, 10 days	25.38(16.69) 29.75(13.31) 4.38	Level of Evidence: IIB/class III Study protocol: - Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Nettleton & Lesser, 1991	6; 6; F=4; M=2	64.83(7.83) 55-74	Fluent = 4 Anomic = 1 Non-fluent = 1	Mod. = 1 Sev. = 5	47 6-96	Type: I Description: Semantic therapy involved word-picture matching, yes/no feature judgments and category sorting. Phonological therapy involved repetition of picture name, rhyme judgment and naming with progressive phonemic cues. Intensity: 2x/week, 60 min, 8 weeks	12.20(6.84) 14.50(6.26) 2.30	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Nickels & Osborne, 2016	4; 4; M= 3; F= 1	59.75(18.66) 34-74	Global= 2 Anomic= 1 TCS= 1	Mod. = 3 Sev. = 1	25.8 15-42	Type: A/P Description: Constraint Induced Aphasia Therapy Plus (CIAT-plus): Therapy addressed verbal expression through Go Fish. 1) Volunteer played the game with two PWA. 2) PWA chose a card and asked the other players for a card. 3) Co-player then responded. PWA could use multi-modal communication, as needed. Shaping was included to increase the complexity of their verbal responses. Intensity: 2x/week, 90 min, 4 weeks	23.25(6.99) 25.25(8.18) 2.00	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Raymer, Kohen, & Saffell, 2006a	5; 4; M=2; F=3	70.80(12.11) 51-82	Broca's=2 Conduction = 2 Mixed = 1	Mod. = 1 Sev. = 4	18.4 4-42	Type: I Description: MossTalk Words (i.e., computer-assisted treatment program). PWA completed multi-modal matching exercises involving 1) spoken plus written word to picture matching 2) spoken word to picture matching 3) written word to picture matching Intensity: 1-2x/week, 60 min, 6-12 weeks, then, 3-4x/week, 60 min 3-4 weeks. 4 week break in between each 12-hour tx. phase.	6.80(9.98) 7.80(7.92) 1.00	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Raymer, Singletary, et al., 2006b	9; 9; M=6; F=3	60.67(9.08) 49-70	Broca's = 6 Wernicke's = 2 Conduction = 1	Mod. = 3 Sev. = 6	29 5-62	Type: I Description: Gesture-Verbal Treatment (GVT): 1) SLP showed the picture and modeled the target word and a gesture. 2) PWA produced word and gesture three times 3) SLP showed gesture in isolation and participant imitated three times 4) SLP presented the target and PWA repeated it three times 4) After a 5-second delay, SLP prompted participant to show and tell them what happened in the picture. Intensity: 3-4x/week, 60 min, 10 weeks	11.33(11.31) 12.55(14.11) 1.22	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Raymer et al., 2012	8;8; M= 4; F= 4	58.13(14.30) 40-79	Broca's = 4 TMA = 2 TSA = 1 Wernicke's = 1	Mod.= 4 Sev. = 4	13.5 5-30	Type: I Description: Errorless Naming: 1) SLP modelled the picture name and PWA repeated 2)SLP showed the written word and PWA read it aloud three times 3)Written word was removed and PWA was given 5 seconds to hold onto it 4) SLP prompted PWA to name it again. Gestural Facilitation: 1) SLP modelled the name and a related gesture 2) SLP modelled the gesture alone for SLP to imitate three times 3) SLP modelled name and PWA repeated three times 4) Clinician modelled gesture while showing the picture 5) After 5 second delay SLP prompted PWA to provide name and gesture again. Intensity: 2-3x/week, 60 min, 10 weeks	14.63(8.31) 14.50(6.78) -13	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Rider, Wright, Marshall, & Page, 2008	3; 3; M=2; F=1	63.33(9.07) 55-73	Nonfluent =3	Mild = 1 Mod. = 2	65.67 26-126	Type: I Description: Trained words related to 6-8 contexts (i.e., story retell and procedural narratives) using SFA (e.g., Boyle, 2004 Boyle & Coelho, 1995) Intensity: 2-3x/week, 60 min, 7-14 weeks	30.33(11.06) 34.00(10.15) 3.67	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Rodriguez, Raymer, & Rothi, 2006	4 ;4; M=3; F=1	65.00(9.76) 52-73	Conduction = 2 Wernicke's = 1 Broca's =1	Mild =1 Sev. =3	34.25 8-96	Type: I Description: All PWA received both verb naming treatments. Gesture-Verbal Treatment (GVT): 1) SLP showed the picture and modeled the target word and a gesture. 2) PWA produced word and gesture three times 3) SLP showed gesture in isolation and PWA imitated three times 4) SLP presented the target and PWA repeated it three times 4) After a 5-second delay, SLP prompted participant to show and tell them what happened in the target picture. Semantic-Phonologic Treatment: 1) SLP showed PWA the picture and modeled the target word 2) PWA answered semantic and phonologic questions about the target 3) PWA produced the target three times 4) After a 5-second delay, PWA attempted to explain what was happening in the picture. Intensity: 2-3/week, 60 min, 10-14 weeks	12.50(19.00) 14.75(23.08) 2.25	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Rodriguez et al., 2013	11;11; M=4; F=4	60.45(17.67) 18-79	N/A	Mod.	25.81 8-56	Type: INT Description: Individual treatment involved both impairment-based and functional therapy. PWA and family members were involved in group treatment (i.e., share information about available local services, facilitate discussions about "living with aphasia" promoting social interaction and multi-modal communication) Computer-based therapy (i.e., Bungalow, REACT, Speech Sounds on Cue) Challenge Task: specific goal each PWA wanted to achieve by the end of the program. Intensity: 5x/week, 240 min, 2 weeks OR 5x/week, 300 min, 4 weeks	20.10(19.10) 22.50(21.30) 2.40	Level of Evidence: IIB/class III Study protocol: + Blinding: + Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Rose, Attard, Mok, Lanyon, & Foster, 2013	11;11; M= 6; F = 5	58.09(10.63) 39-74	Broca's = 6 Anomic = 4, Conduction = 1	Above =1 Mild = 1 Mod. = 4 Sev. = 5	44 17-88	Type: A/P Description: PWA targeted word retrieval in small groups through treatment activities including (i.e., Go Fish, Memory, Request Role plays, Board games, rapid naming while playing snap, Who am I) In CIAT Plus: Verbal production was the goal but cueing was provided as needed (i.e., phonemic cue, written cue). In multi-modal aphasia therapy (M-MAT): Verbal production was also the goal but, multi-modal cueing was provided (i.e., gesture, drawing, written model, verbal model). All PWA received both treatments. Intensity: 4x/week, 195 min, 4 weeks	20.18(16.28) 27.64(18.92) 7.45	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Sandberg, Bohland, & Kiran, 2015	10; 10; M=7; F=3	59.40(10.01) 47-75	Anomic=6 2 Conduction=2 Broca's=1 TCM=1	Above =6 Mild= 3 Mod.=1	55.7 7-134	Type: I Description: PWA were trained on ten abstract words in a particular context category (e.g., courthouse) and ten untrained concrete words from the same context-category were monitored to measure generalization. Treatment steps included 1) Feature selection 2) Abstract/concrete lexical decision 3) Synonym generation Intensity: 2x/week, 120 min, 10 weeks	47.34(13.40) 49.80(13.57) 2.46	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Schwartz, Saffran, Fink, Myers, & Martin, 1994	8;6; M=4; F=2	60.00(8.37) 46-70	Nonfluent = 5	Above = 1 Mod. = 3 Sev. = 2	4.91 59-102	Type: I Description: Mapping Therapy: 1) PWA read a sentence aloud and then, was given assistance if needed by the SLP. 2) They were asked to identify the verb, the agent and the patient/theme. 3) PWA would underline the verb and head noun in the noun phrases. Intensity: 3x/week, 60-90 min, 17.38 weeks	24.33(14.25) 32.17(15.20) 7.83	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
Silkes, 2015	4; 4; N/A	60.25(1.26) 59-62	Fluent=3 Nonfluent=1	Mild = 1 Mod. = 1 Sev. = 2	58.5 24-96	Type: I Description: Masked repetition priming treatment: Each section PWA saw prime-picture pair 16 times and had four opportunities to name each picture. PWA were instructed to watch the screen and try to name the picture when they saw it for the 4th time. Intensity: 2x/day, 12 days	24.00(13.44) 26.50(14.55) 2.50	Level of Evidence: III/class IV Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
van Hees, Angwin, McMahon, & Copland, 2013	8; 8; F=5; M=3	56.38(9.15) 41-69	Anomic=6 Conduction=2	Mild	52.25 17-170	Type: I Description: Semantic Feature Analysis (SFA): 1) Name the item 2) produced semantic features (i.e., use, action, properties, location and association) 3) Name the item again Phonological Components Analysis (PCA) 1) Name the item 2) Produced phonological features (i.e., first sound, syllables, last sound, association and rhyme) Intensity: 3x/week, 60-90 min, 4 weeks	38.50(15.44) 43.50(14.04) 5.00	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A

Votruba, Rapport, Whitman, Johnson, & Langenecker, 2013	50; 50; M=28; F=22	56.80(15.20) 20-85	N/A	Mod.	43.6 N/A	Type: INT Description: Outpatient speech language therapy (SLT): All PWA received mostly individual SLT and adjunct group SLT. Individual SLT addressed expressive language (100%), writing (92%), comprehension/reading/naming (83%), spelling (50%), repetition/prosody (8%). Intensity: Outpatient SLT university clinic schedule	25.70(18.60) 26.90(19.80) 1.20	Level of Evidence: IIB/class III Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: - Precision: + Intention to treat: N/A
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Supplementary Material 7: Demographic information for between group studies using Western Aphasia Battery – Aphasia Quotient

Note: M=Male; F = Female; TCM = transcortical motor; TSM = transcortical sensory; sev. = severe; I = Impairment-based treatment; A/P = activity/participation-based treatment; INT = integrated treatment; st. = standardized; CS = convenience sample

Study Name	N; Sex	Mean Age (SD) Range	Mean MPO range	Treatment (Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Mean Age(SD) Range	Mean MPO range	Treatment (Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Methodological Rigor
Altmann et al., 2014	G=7; M=2; F=5 NG=7 M=6; F=1	72.14 (10.51) 62-92	6+ N/A	Type: I Description: Phase 1 and Phase 2: present pictures for naming Phase 3: PWA was presented with auditory/orthographic representations of category name and PWA generated a category member. Clinicians provided feedback and/or corrected them. Treatment started with L hand opening, reaching into a box to press a red button and making a non-meaningful circular gesture with Left hand during correction phase. Intensity: 5x/week, 120 min, 3 weeks	65.47 (8.34) 67.09 (9.09) 1.62	63.00 (9.22) 53-80	6 MPO+ N/A	Type: I Description: Phase 1 and Phase 2: present pictures for naming Phase 3: PWA was presented with auditory/orthographic representations of category name and PWA generated a category member. Clinicians provided feedback and/or corrected them. Treatment started with therapist pressing a button. There was no hand movement during the correction procedure Intensity: 5x/week, 120 min, 3 weeks	71.91 (11.80) 72.89 (14.50) 0.98	Level of Evidence: IIA/class II Study protocol: + Blinding: - Sampling/allocation:+ Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: +
Des Roches, Balachandran, Ascenso, Tripodis, & Kiran, 2015	E=40; N/A C= 9; M=7; F=2	62.98 (10.68) 38-83	53.3 1-178	Type: I Description: Participants completed a variety (between 2-11) of 37 different cognitive or language tasks in Constant Therapy (e.g., naming, rhyming, memory, symbol matching, etc.) Intensity: 5x/week, ~45 min, 10 weeks	68.90 (25.70) 72.90 (23.20) 3.91	67.11 (9.98) 53-87	98 13-359	Type: I Description: Participants completed a variety (between 2-14) of 37 different cognitive or language tasks in Constant Therapy (e.g., naming, rhyming, memory, symbol matching, etc.) Intensity: 1x/week, 40 min, 10 weeks	67.70 (31.70) 68.90 (33.60) 1.12	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation:+ Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest:+ Precision: + Intention to treat: +
Godecke, Hird, Lalor, Rai, & Phillips, 2012	DT=32; M=14; F=18 UC=27; M=15; F=12	70.30 (12.8)	6.1 DPO N/A	Type: I Description: Participants were administered impairment-based therapies (i.e., lexical-semantic (BOX), mapping, semantic feature analysis (SFA)) Intensity: 5x/week, 30-80 min, 4 weeks	33.78 (26.37) 56.42 (30.76) 22.64	67.70 (15.40)	3.4 DPO N/A	Type: I Description: Participants were administered impairment-based therapies (i.e., lexical-semantic (BOX), mapping, semantic feature analysis (SFA)). Intensity: 1x/week, 80 min, 4 weeks	20.46 (26.11) 34.12 (33.22) 13.66	Level of Evidence: IIB/ class III Study protocol: + Blinding: + Sampling/allocation:+ Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: +

										Precision: + Intention to treat: +
Godecke et al., 2014	VER=20; M=12; F=8 UC=27; M=15; F=12	70.70 (14.30)	3.4 DPO N/A	Type: INT; Description: PWA received either individual or group therapy. Individual therapy consisted of Semantic Feature Analysis (SFA), Cued Naming Therapy, Lexical-Semantic (BOX), Mapping therapy and/or Phonological Feature Therapy. Group therapy consisted of Constraint Induced Aphasia Therapy (CIAT). 5x/week, 180-240 min, 4 weeks	43.53 (27.02) 67.55 (30.16) 24.02	67.7 (15.4)	3.2 DPO N/A	Type: I Description: 85% of participants did not receive direct speech and language therapy. When participants received therapy, it consisted of BOX therapy, Mapping therapy and Semantic Feature Analysis (SFA). Intensity: 11min, ~ 3 weeks	19.62 (26.26) 32.83 (45.62) 11.75	Level of Evidence: IIB/ class III Study protocol: + Blinding: + Sampling/allocation:CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: +
Katz & Wertz, 1997	CRT=21; N/A CS=29; N/A	61.60 (10.00) 48-83	74.4 12- 228	Type: I Description: Visual matching and reading comprehension software consisted of 10 matching activities (e.g., letters and words) and 22 reading comprehension activities (e.g., letters, words, phrases). The tasks varied in complexity (i.e., 8 difficulty levels). Intensity: 3x/week, 60 min, 26 weeks	68.90 (24.30) 73.60 (22.60) 4.70	66.40 (6.00) 53-76	64.80 21.6-228	Type: N/A Description: Computer stimulation software included games (e.g., Mini Putt) and cognitive rehabilitation tasks (e.g., Captain's Log). Intensity: 3x/week, 60 min, 26 weeks	61.90 (29.50) 63.40 (28.50) 1.50	Level of Evidence: IB/class I Study protocol: + Blinding: + Sampling/allocation:CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: +
Maher et al., 2006	CILT=4; M=3; F=1 PACE=5; M=3; F=2	48.25 (6.99) 40-55	38.75 24-48	Type: A/P Description: Constraint Induced Language Therapy (CILT): Treatment was given in groups of two or three with two clinicians also participating in the group. PWA were constrained to verbal expression only. Multi-modal communication was restricted and a barrier was placed between PWA to further reduce it. They played a card game in which they had to ask another participant for a card with the attempt of matching a card in their own hand. Speakers took turns and responses were shaped to increase complexity over time. Intensity: 4x/week, 180 min, 2 weeks	58.55 (12.99) 65.08 (10.22) 6.52	59.00 (12.81) 41-73	35.4 14-72	Type: A/P Description: Treatment used a modified Promoting Aphasics' Communication Effectiveness (PACE) approach. PWA could use multi-modal communication to perform the task. Intervention was provided to improve any incorrect responses regardless of the modality used. Intensity: 4x/week, 180 min, 2 weeks	53.94 (13.21) 56.90 (13.93) 2.96	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation:CS Treatment fidelity: + Significance of primary outcome measure: - Significance for st. outcome of interest: - Precision: + Intention to treat: +

Supplementary Material 8: Demographic information for between group studies using Boston Naming Test

Note: M=Male; F = Female; TCM = transcortical motor; TSM = transcortical sensory; sev. = severe; I = Impairment-based treatment; A/P = activity/participation-based treatment; INT = integrated treatment; st. = standardized; CS = convenience sample

Study Name	N; Sex	Mean Age (SD) Range	Mean MPO range	Treatment (Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Mean Age(SD) Range	Mean MPO range	Treatment (Tx)	Pre-Tx M(SD) Post-Tx M(SD) Change Score	Methodological Rigor
Altmann et al., 2014	G=7; F=5; M=2 NG=7; M=6; F=1	72.10 (10.50) 62-92	N/A 6+	Type: I Description: Phase 1 and Phase 2: present pictures for naming Phase 3: PWA was presented with auditory/orthographic representations of category name and PWA generated a category member. Clinicians provided feedback and/or corrected them. Treatment started with L hand opening, reaching into a box to press a red button and making a non-meaningful circular gesture with Left hand during correction phase. Intensity: 5x/week, 120 min, 3 weeks	24.71 (13.44) 28.57 (16.07) 3.86	63.00 (9.20) 53-80	N/A 6+	Type: I Description: Phase 1 and Phase 2: present pictures for naming Phase 3: PWA was presented with auditory/orthographic representations of category name and PWA generated a category member. Clinicians provided feedback and/or corrected them. Treatment started with therapist pressing a button. There was no hand movement during the correction procedure Intensity: 5x/week, 120 min, 3 weeks	30.86 (6.26) 33.86 (9.56) 3.00	Level of Evidence: IIA/class II Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A
Des Roches, Balachandran, Ascenso, Tripodis, & Kiran, 2015	E=40; N/A C= 9; M=7; F=2	62.98 (10.68) 38-83	53.3 1-178	Type: I Description: Participants completed a variety (between 2-11) of 37 different cognitive or language tasks in Constant Therapy (e.g., naming, rhyming, memory, symbol matching, etc.) Intensity: 5x/week, ~45 min, 10 weeks	28.29 (22.33) 29.45 (21.25) 1.16	67.11 (9.98) 53-87	98 13-359	Type: I Description: Participants completed a variety (between 2-14) of 37 different cognitive or language tasks in Constant Therapy (e.g., naming, rhyming, memory, symbol matching, etc.) Intensity: 1x/week, 40 min, 10 weeks	26.66 (24.40) 26.23 (23.86) -43	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: N/A

Maier et al., 2006	CILT=4; M=3; F=1 PACE=5; M=3; F=2	48.25 (6.99) 40-55	38.752 4-48	Type: A/P Description: Constraint Induced Language Therapy (CILT): Treatment was given in groups of two or three with two clinicians also participating in the group. PWA were constrained to verbal expression only. Multi-modal communication was restricted and a barrier was placed between PWA to further reduce it. They played a card game in which they had to ask another participant for a card with the attempt of matching a card in their own hand. Speakers took turns and responses were shaped to increase complexity over time. Intensity: 4x/week, 180 min, 2 weeks	18.00 (16.47) 21.00 (17.32) 3.00	59.00 (12.81) 41-73	35.4 14-72	Type: A/P Description: Treatment used a modified Promoting Aphasics' Communication Effectiveness (PACE) approach. PWA could use multi-modal communication to perform the task. Intervention was provided to improve any incorrect responses regardless of the modality used. Intensity: 4x/week, 180 min, 2 weeks	15.20 (19.64) 18.60 (21.98) 3.40	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: -
Raglio et al., 2016	E=10; M=7; F=3 C=10 M=7; F=3	61.30 (12.76) 42-89	chronic	Type: INT Description: Music therapy + Speech Therapy: Treatment involved a Promoting Aphasics' Communicative Effectiveness (PACE) approach with the addition of music therapy (i.e., play instruments sing with therapist) Intensity: 2x/week, 75 min, 15 weeks	23.00 (21.00) 26.00 (21.00) 3.00	70.90 (8.99) 61-89	chronic	Type: A/P Description: Treatment consisted of a Promoting Aphasics' Communicative Effectiveness (PACE) approach only. Intensity: 2x/week, 45 mins, 15 weeks	16 (19) 19 (19) 3.00	Level of Evidence: IB/class I Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: - Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: +
Wilssens et al., 2015	CIAT=5; N/A BOX=4; N/A	63.00 (8.00)	61 N/A	Type: INT Description: Constraint Induced Aphasia Therapy (CIAT): PWA participated in a communication-based group with card games (e.g., "Go Fish"). Verbal expression was encouraged in the game context. They were allowed to produce gestures when communicate, but these were hidden from view of other PWA with a screen. Intensity: daily, 120-180 min, 9-10 consecutive working days	30.20 (14.00) 39.8 (13.8) 9.6	71.00 (9.00) 60-81	52	Type: I Description: PWA were administered BOX, a treatment focused on semantic processing using written words, sentences and longer texts. Intensity: daily, 120-180 min, 9-10 consecutive working days	29.00 (20.10) 39.8 (13.9) 10.8	Level of Evidence: IIA/ class II Study protocol: + Blinding: - Sampling/allocation: CS Treatment fidelity: + Significance of primary outcome measure: + Significance for st. outcome of interest: + Precision: + Intention to treat: No attrition: N/A

Supplementary Material 9: References for all included studies

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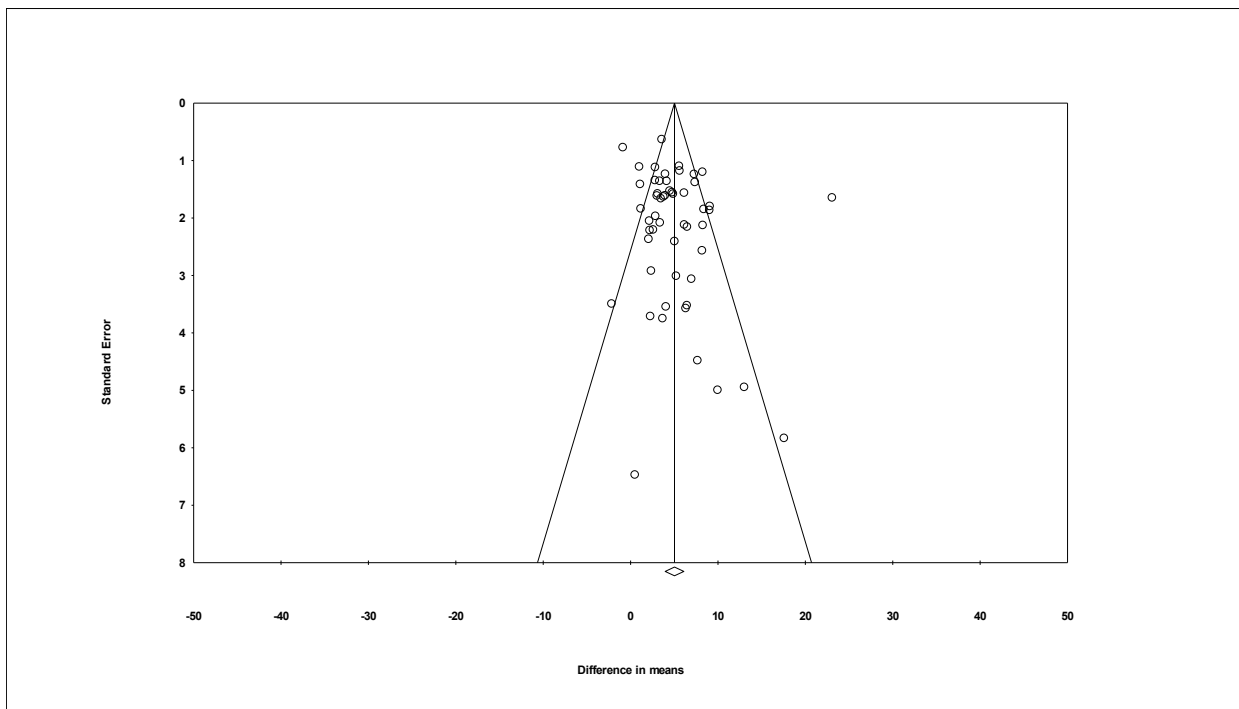
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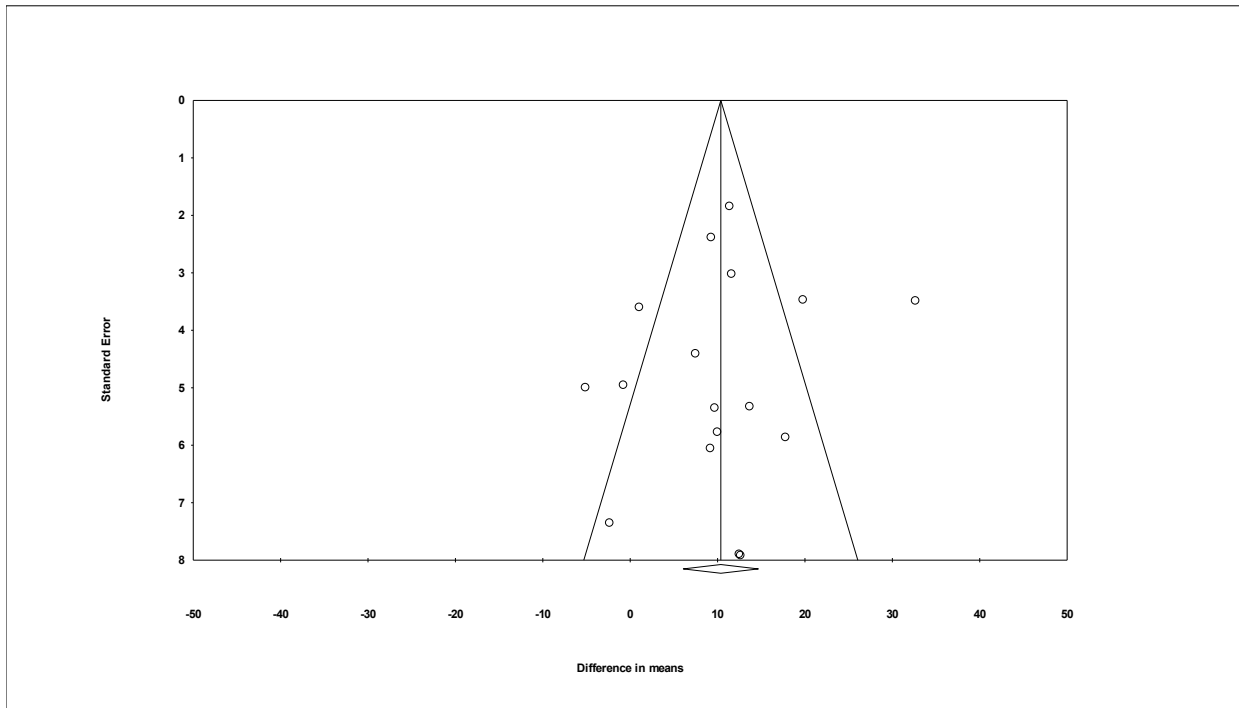
Supplementary Material 10: Funnel plots for meta-analyses using within group designs

These plots reflect relatively symmetric distribution of studies on both sides of the mean, suggesting limited impact of publication bias on the overall summary effect size (SES) results.

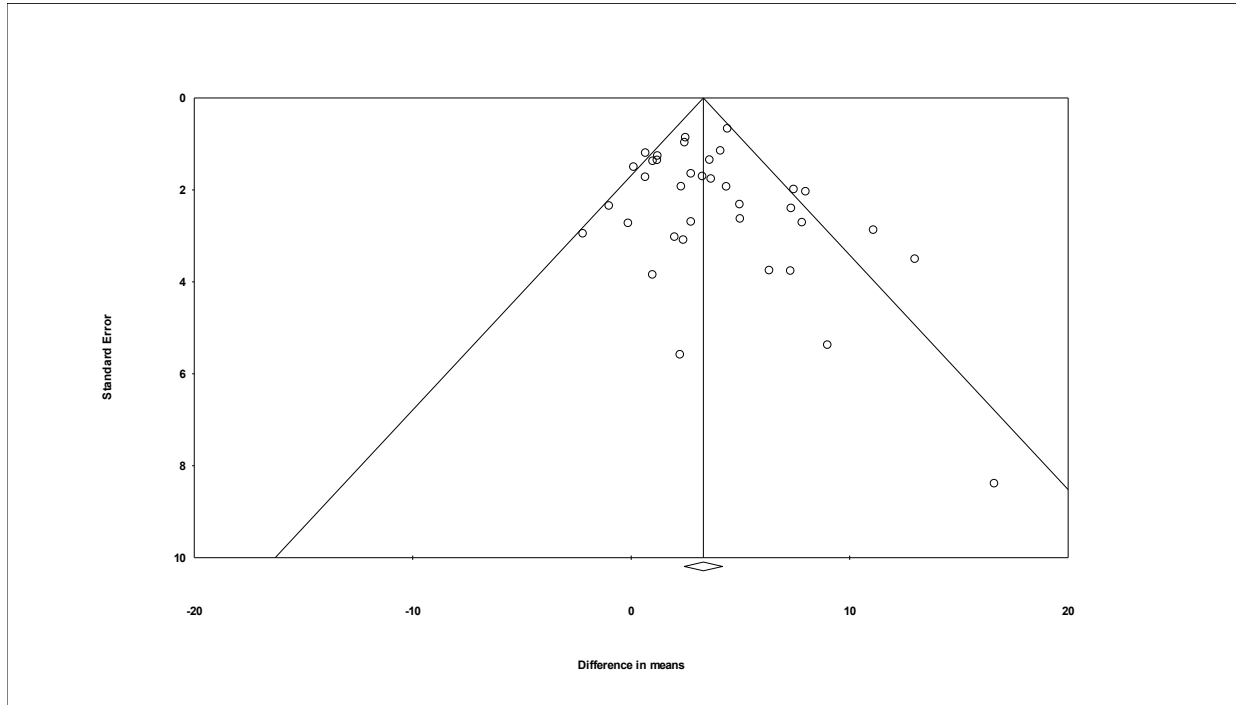
Funnel plot for Western Aphasia Battery-Aphasia within group meta-analysis



Funnel plot for Communicative Effectiveness Index within group meta-analysis



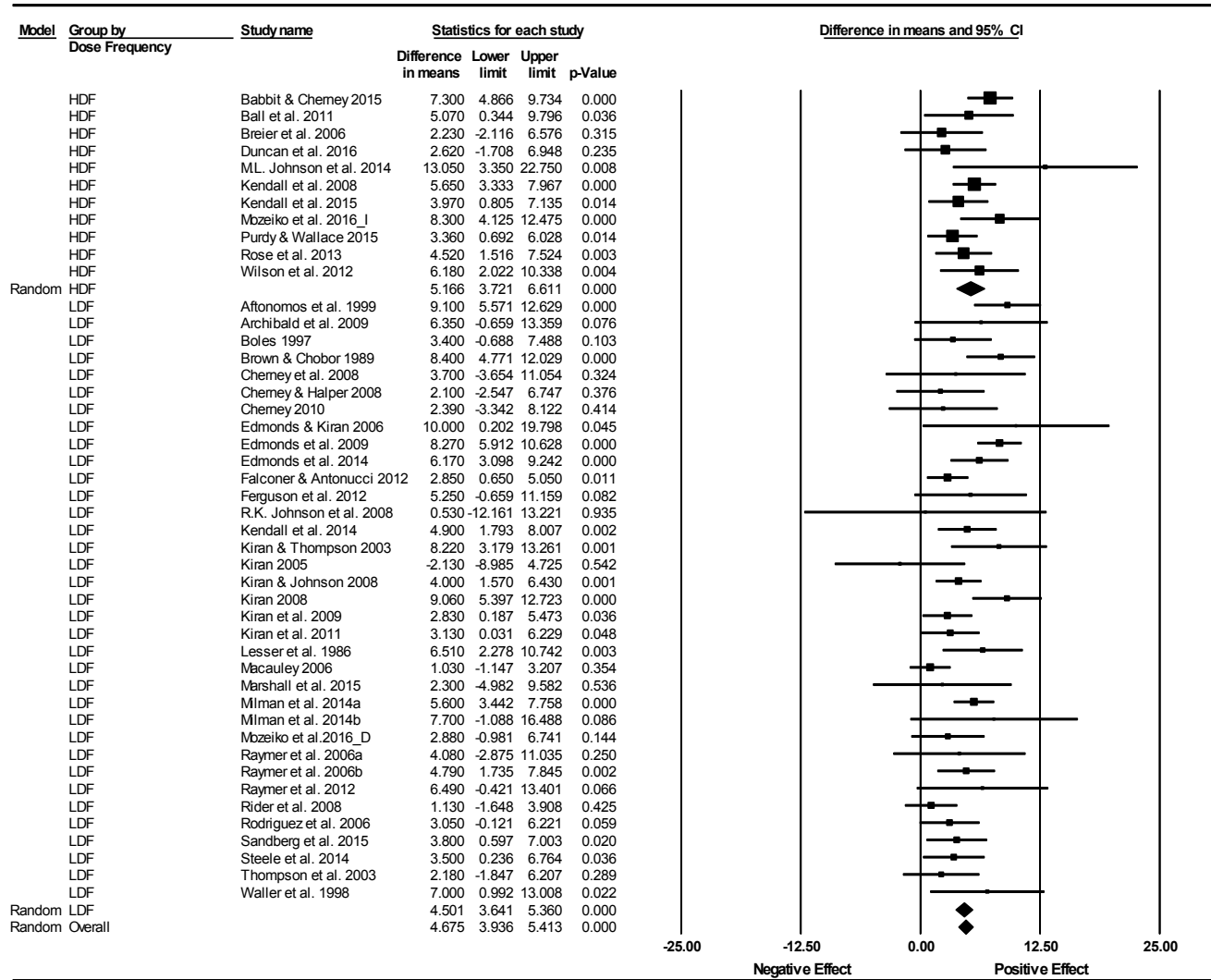
Funnel plot for Boston Naming Test within group meta-analysis



Supplementary Material 11: Forest plots for subgroup analyses using within group study designs

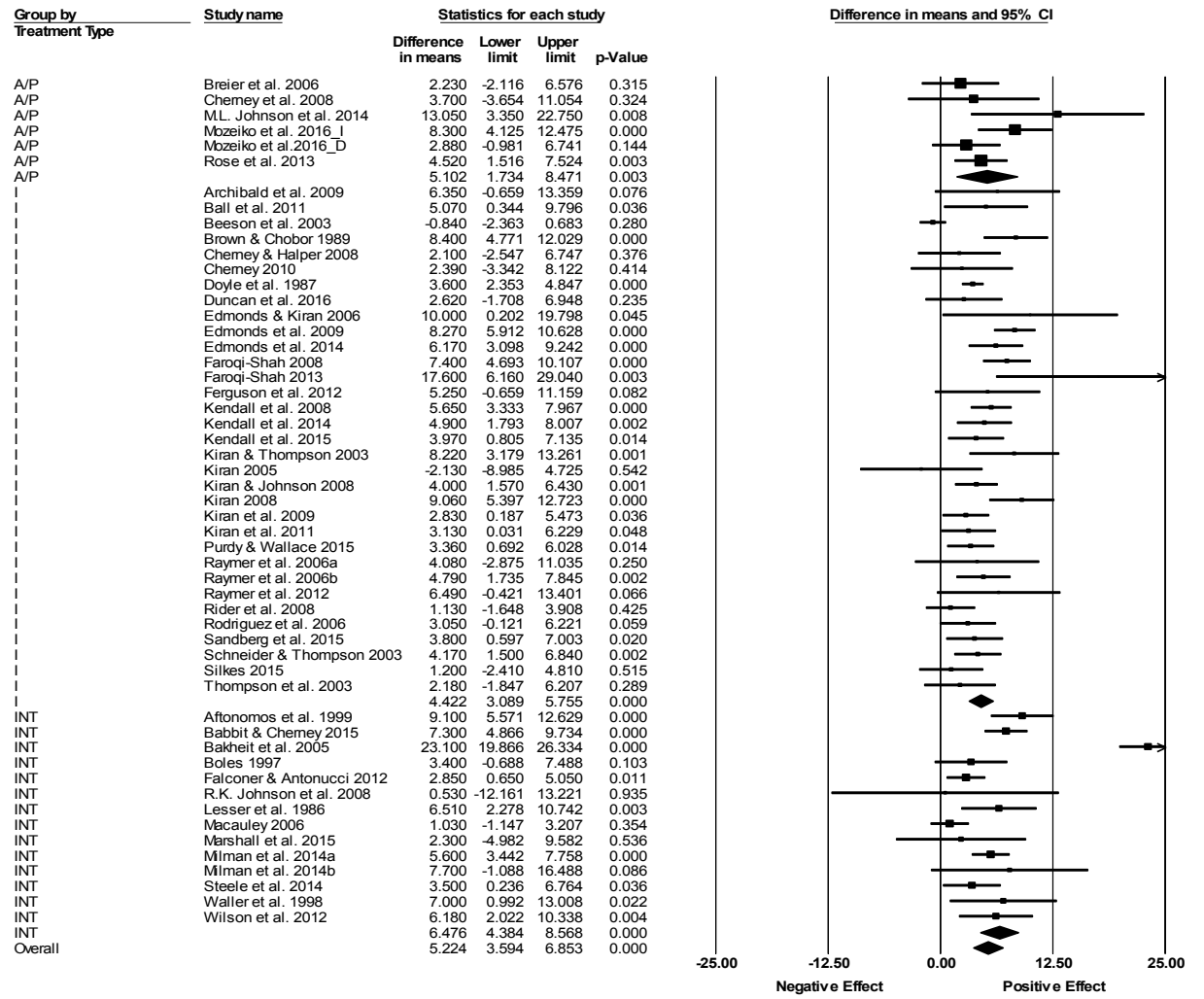
Summary effect sizes for each subgroup and for all of the studies are provided. The difference in means column reflects the pre-treatment mean subtracted from the post-treatment mean. The lower and upper limits columns show the 95% confidence interval surrounding the difference in means. The final row describes the summary effect size, 95% CI, and p-value. The diamond represents the summary effect size. The squares reflect effect sizes of individual studies.

Forest plot of Western Aphasia Battery –Aphasia Quotient subgroup analysis for dose frequency



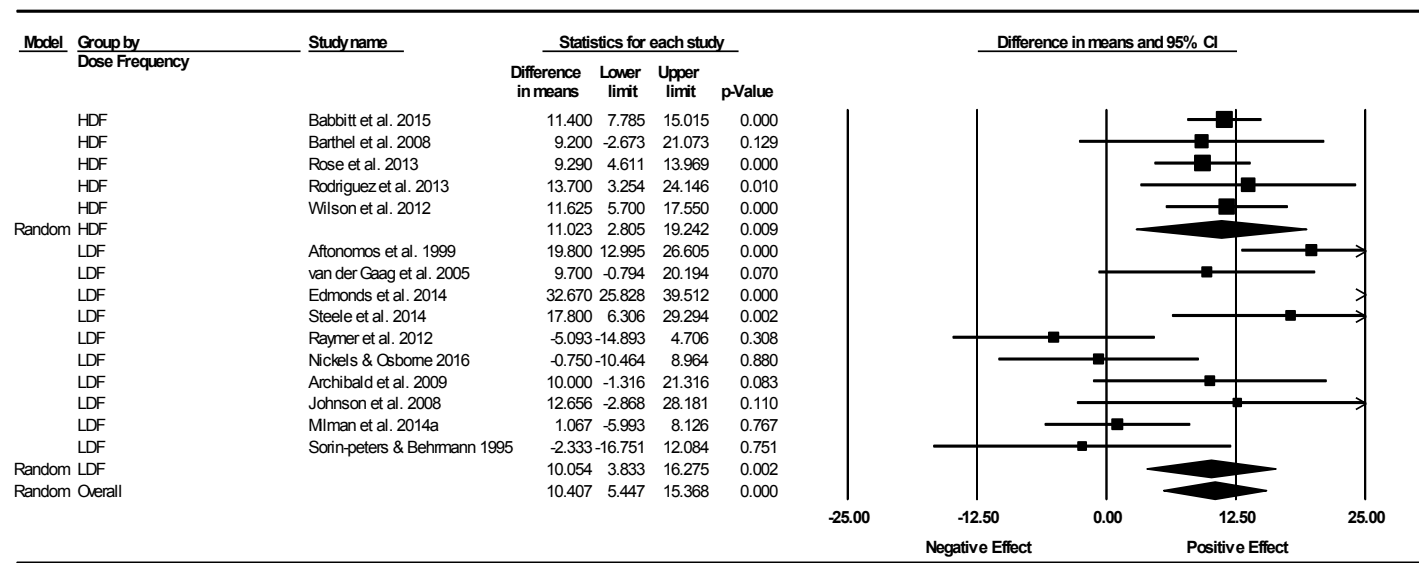
Note: LDF = lower dose frequency treatment schedule, HDF = higher dose frequency treatment schedule. There were no statistically significant differences between summary effect sizes for the lower dose frequency and higher dose frequency subgroups ($Q = .601$, $df = 1$, $p > .05$).

Forest plot of Western Aphasia Battery –Aphasia Quotient subgroup analysis for treatment type



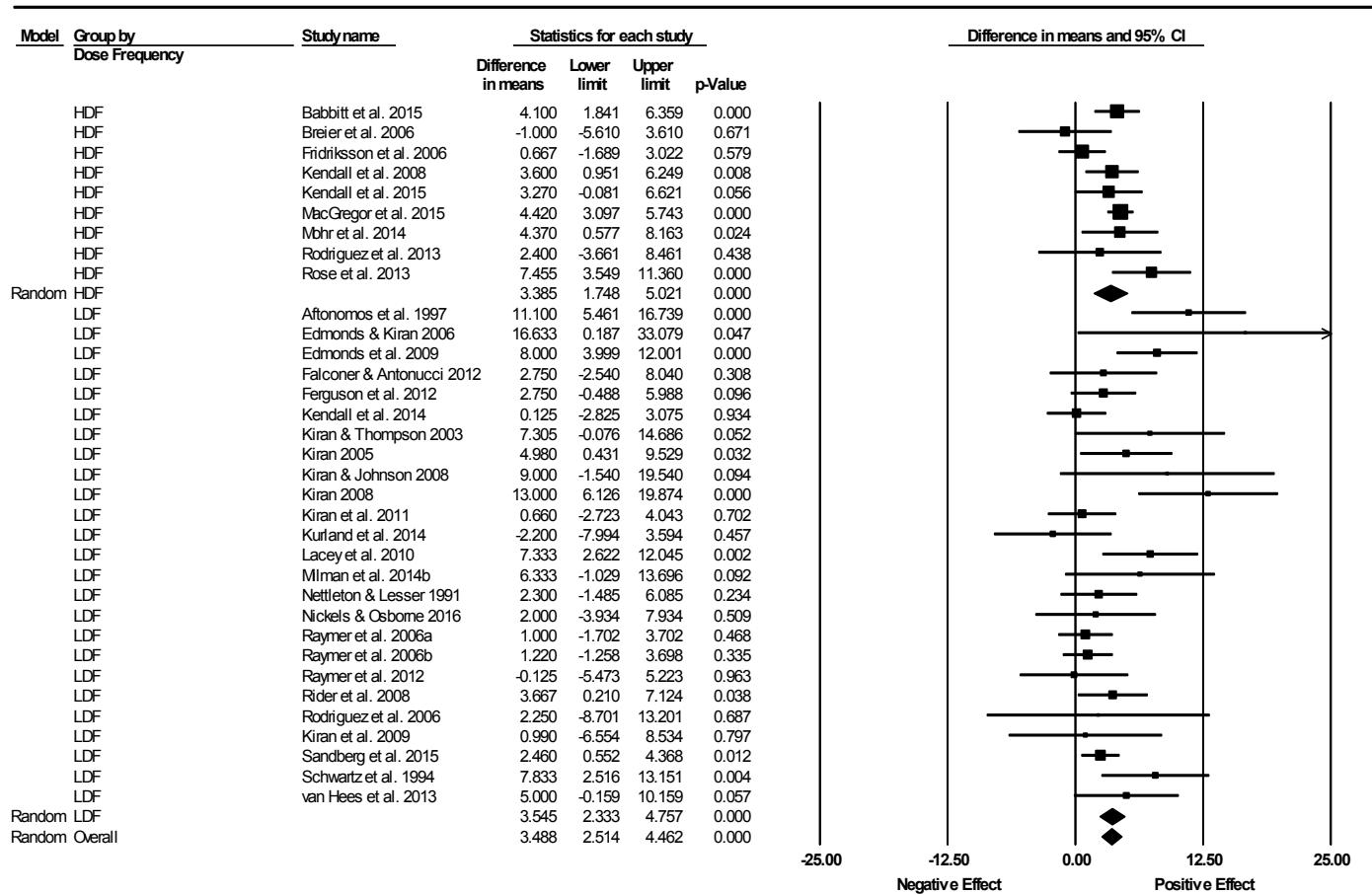
Note: I = impairment-based treatment, A/P = activity/participation treatment, INT= integrated treatment. There were no statistically significant differences between summary effect sizes for the different treatment types ($Q= 2.64$, $df= 2$, $p > .05$).

Forest plot of Communicative Effectiveness Index subgroup analysis for dose frequency



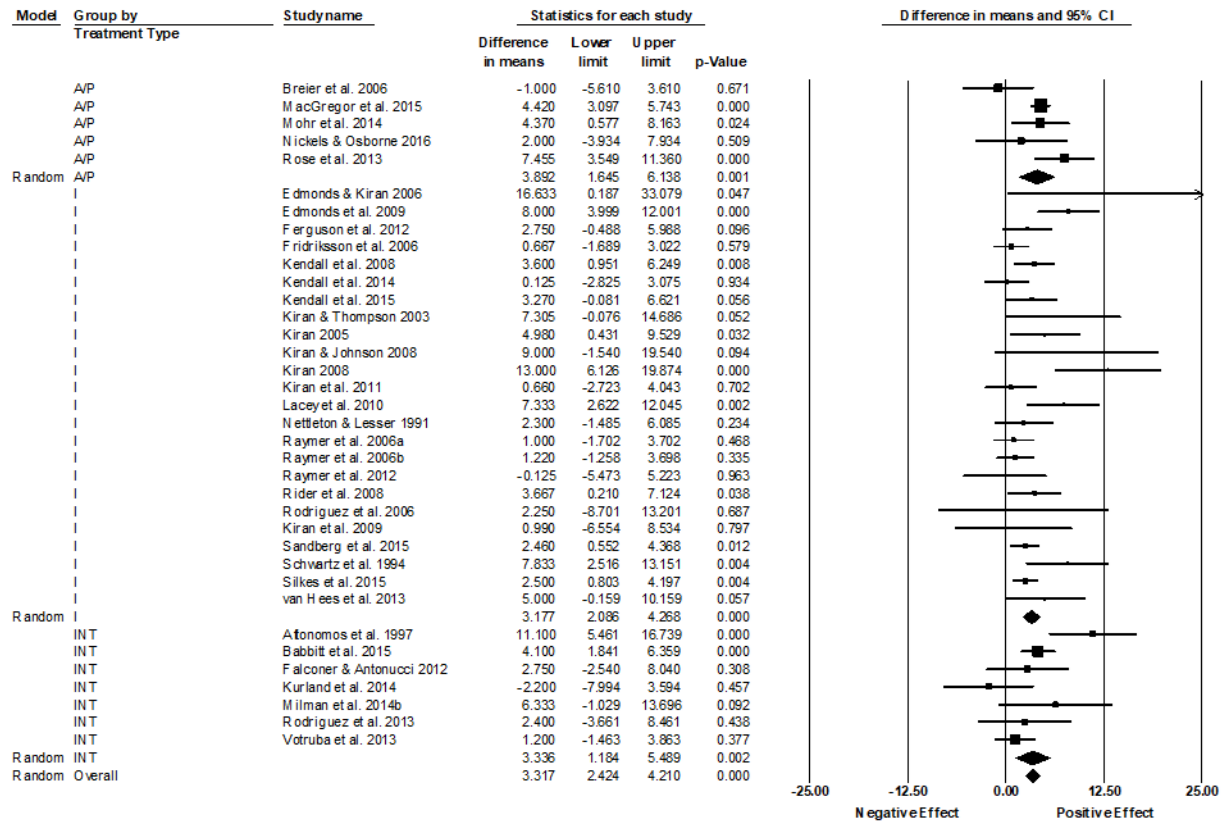
Note: LDF = lower dose frequency treatment schedule, HDF = higher dose frequency treatment schedule. There were no statistically significant differences between summary effect sizes for the lower dose frequency and higher dose frequency subgroups ($Q = .034$, $df = 1$, $p > .05$).

Forest plot of Boston Naming Test subgroup analysis for dose frequency



Note: LDF = lower dose frequency treatment schedule, HDF = higher dose frequency treatment schedule. There were no statistically significant differences between summary effect sizes for the lower dose frequency and higher dose frequency subgroups ($Q = .024$, $df = 1$, $p > .05$).

Forest plot of Boston Naming Test analysis for treatment type



Note: I = impairment-based treatment, A/P = activity/participation treatment, INT = integrated treatment. There were no statistically significant differences between the summary effect sizes across different treatment types ($Q=.32, df= 2, p> .05$).

Supplementary Material 12: Summary of study quality ratings

	Study Protocol	Blinding	Sampling	Treatment Fidelity	Statistics-primary	Statistics-standardized	Precision	I-T-T
Within Group	96	10	99	47	50	40	100	N/A
Between Group	100	38	50	88	100	100	100	25

Note: Value reflects percentage of studies meeting criteria. Statistics-primary indicates that researchers tested for significance on the primary outcome measure; Statistics-standardized reflects that researchers tested for significance on the standardized outcome measure of interest (i.e., WAB, BNT, or CETI); Precision = provided adequate information to calculate an effect size; I-T-T = intention-to-treat analysis