

**Supplemental Material S2.** Data extraction table for original research on "multimodal therapy."

<b>Paper</b>	<b>Main terms used</b>	<b>Target of intervention</b>	<b>Input (stimulus)</b>	<b>Clinician input (cueing/prompting/modeling)</b>	<b>Participant output (response required)</b>	<b>On verbal errors or part of training protocol?</b>	<b>Timing of modalities<sup>a</sup></b>
Churney, K. (2014). <i>Drawing and multimodality communication training as an effective treatment option for individuals with nonfluent aphasia</i> . California State University, Long Beach.	Multimodality communication training	<b>Total Communication</b> (gesture, drawing, spoken expression, written)	Pictures	Not stated	Verbal, gesture, writing, drawing	n/a	Consecutive
Crossley, A. (2007). <i>Effects of multi-modality communication for people with aphasia (PWAs) and their communication partners (CPs)</i> . Dalhousie University, Halifax, Canada.	Multi-modality communication treatment	<b>Total Communication</b> (gesture, drawing, written, visual: symbols)	Pictures	Modeling gesture, drawing, writing, picture board (pointing)	Verbal (though not explicitly stated), Gesture, drawing, writing, picture board (pointing)	n/a	Participant choice
Carlomagno, S., Zulian, N., Razzano, C., De Mercurio, I., & Marini, A. (2013). Coverbal gestures in the recovery from severe fluent aphasia: A pilot study. <i>Journal of Communication Disorders</i> , 46(1), 84–99. <a href="https://doi.org/10.1016/j.jcomdis.2012.08.007">https://doi.org/10.1016/j.jcomdis.2012.08.007</a>	Multimodal communication therapy	<b>Total Communication</b> (gesture, spoken expression)	Pictures	Modeling and feedback of gesture	Gesture + verbal	n/a	Simultaneous
Carr, S. A. (2013). <i>Effects of semantic + multimodal communication program for switching behavior in severe aphasia</i> (Doctoral dissertation). Duquesne University, Ann Arbor, MI.	Multimodal Communication Program	<b>Total Communication</b> (gesture, visual: symbols, visual: drawing, spoken expression)	Pictures	Modeling and feedback of verbal, communication board, gesture, drawing	Verbal, communication board (pointing), gesture, drawing	n/a	Consecutive (as per Thiel et al., 2015)
Carr, S. A., & Wallace, S. E. (2013). <i>Effects of semantic + multimodal communication program for switching behavior in moderate-severe aphasia</i> . Presented at the 43rd Clinical Aphasiology Conference, Tucson, AZ. Retrieved from <a href="http://aphasiology.pitt.edu/2465/">http://aphasiology.pitt.edu/2465/</a>	Multimodal Communication Program	<b>Total Communication</b> (gesture, visual: symbols, visual: drawing, spoken expression)	Pictures	Modeling and feedback of verbal, communication board, gesture, drawing	Verbal, communication board (pointing), gesture, drawing	n/a	Consecutive
Schwartz, L., Nemeroff, S., & Reiss, M. (1974). An investigation of writing therapy for the adult aphasic: The world level. <i>Cortex</i> , 10(3), 278–283. <a href="https://doi.org/10.1016/S0010-9452(74)80020-1">https://doi.org/10.1016/S0010-9452(74)80020-1</a>	Multi-modality language therapy	<b>Total Communication</b> (spoken expression, gesture, reading comprehension, auditory comprehension, writing, drawing)	Pictures, written words, verbal	Not stated	Verbal, pictures (pointing), reading aloud, writing	n/a	Consecutive (As per Thiel et al. 2015)

<sup>a</sup>Within total communication papers, modalities were trained simultaneously (e.g., producing gesture and speech within a sentence), separately (e.g., treating drawing in one session and writing in another), or consecutively (e.g., spoken naming, then written naming, repetition and symbol pointing for the same target word in one session). Alternatively, participants were given free choice as to modalities and timing.

Wallace, S. E., & Kayode, S. (2017). Effects of a semantic plus multimodal communication treatment for modality switching in severe aphasia. <i>Aphasiology</i> , 31(10), 1127–1142. <a href="https://doi.org/10.1080/02687038.2016.1245403">https://doi.org/10.1080/02687038.2016.1245403</a>	Multimodal Communication Treatment	<b>Total Communication</b> (spoken expression, gesture, visual: picture pointing, drawing)	Pictures	Modeling and feedback of verbal, picture board (pointing), gesture, drawing	Verbal, picture board (pointing), gesture, drawing	n/a	Consecutive
Wallace, S. E., Purdy, M., & Skidmore, E. (2014). A multimodal communication program for aphasia during inpatient rehabilitation: A case study. <i>NeuroRehabilitation</i> , 35(3), 615–625. <a href="https://doi.org/10.3233/NRE-141136">https://doi.org/10.3233/NRE-141136</a>	Multimodal communication program	<b>Total Communication</b> (spoken expression, gesture, visual: picture pointing, drawing)	Pictures	Modeling and feedback of verbal, picture board (pointing), gesture, drawing	Verbal, picture board (pointing), gesture, drawing	n/a	Consecutive
Purdy, M., Duffy, R., & Coelho, C. A. (1994). An investigation of the communicative use of trained symbols following multimodality training. <i>Clinical Aphasiology</i> , 22, 345–256.	Multimodality training	<b>Total Communication</b> (spoken expression, gesture, visual: picture pointing)	Picture (for gesture and verbal response) Verbal (for picture response)	Modeling picture pointing, gesture and verbal, providing these on errors. Shaping of gestures. Phonemic, semantic and motor cues for verbal.	verbal gesture picture board (pointing)	n/a	Separate
Lasker, J., LaPointe, L., & Kodras, J. (2005). Helping a professor with aphasia resume teaching through multimodal approaches. <i>Aphasiology</i> , 19(3-5), 399–410.	Multimodal approaches	<b>Total Communication</b> (spoken expression, visual: pictures, writing, text-to-speech)	n/a	n/a	Practiced verbal output, written slides with pictures, developed text-to-speech utterances	n/a	Separate then simultaneous
Purdy, M., & Van Dyke, J. A. (2011). Multimodal communication training in aphasia: A pilot study. <i>Journal of Medical Speech-Language Pathology</i> , 19(3), 45–53.	Multimodal Communication Training	<b>Total Communication</b> (spoken expression, writing, gesture, drawing, visual: picture pointing)	Pictures	Modeling and shaping verbal, gesture, writing, picture board (pointing)	Verbal, gesture, writing, picture board (pointing)	n/a	Consecutive
Purdy, M., & Wallace, S. (2013). <i>The feasibility of a multimodal communication treatment for aphasia during inpatient rehabilitation</i> . Presented at the Clinical Aphasiology Conference, Tucson, AZ. Retrieved from <a href="http://aphasiology.pitt.edu/2505/">http://aphasiology.pitt.edu/2505/</a>	Multimodal Communication Training	<b>Total Communication</b> (spoken expression, writing, gesture, drawing, visual: picture pointing)	Pictures	Modeling verbal, gesture, drawing writing, picture board (pointing)	Verbal, gesture, drawing writing, picture board (pointing)	n/a	Consecutive

Purdy, M., & Wallace, S. E. (2015). Intensive multimodal communication treatment for people with chronic aphasia. <i>Aphasiology</i> , 30(10), 1071–1093. <a href="https://doi.org/10.1080/02687038.2015.1102855">https://doi.org/10.1080/02687038.2015.1102855</a>	Multimodal Communication Treatment	<b>Total Communication</b> (spoken expression, writing, gesture, drawing, visual: picture pointing)	Pictures	Part 1. Modeling verbal, gesture, drawing, writing, picture board (pointing) Part 2. Prompting for each modality without model unless needed	Verbal, gesture, drawing writing, picture board (pointing)	n/a	Consecutive
Macoir, J., Sauvageau, V. M., Boissy, P., Tousignant, M., & Tousignant, M. (2017). In-home synchronous telespeech therapy to improve functional communication in chronic poststroke aphasia: Results from a quasi-experimental study. <i>Telemedicine &amp; e-Health</i> , 23(8), 630–639. <a href="https://doi.org/10.1089/tmj.2016.0235">https://doi.org/10.1089/tmj.2016.0235</a>	Multimodal language therapy	<b>Total Communication</b> (spoken expression, writing, gesture, drawing)	Pictures	Not stated	Verbal, gesture, writing (typing), drawing	n/a	Participant choice
Beeson, P. M., & Ramage, A. E. (2000). Drawing from experience: The development of alternative communication strategies. <i>Topics in Stroke Rehabilitation</i> , 7(2), 10–20.	Multimodal approach	<b>Total Communication</b> (visual: symbols, visual: drawing, written)	Unclear	Modeling drawing, encouraging picture board use (software), providing copy and recall and anagram treatments	Drawing, verbal, writing, picture board (software)	n/a	Separate
Brookshire, C. E., Conway, T., Pompon, R. H., Oelke, M., & Kendall, D. L. (2014). Effects of intensive phonomotor treatment on reading in eight individuals with aphasia and phonological alexia. <i>American Journal of Speech-Language Pathology</i> , 23(2), S300–S311. <a href="https://doi.org/10.1044/2014_AJSLP-13-0083">https://doi.org/10.1044/2014_AJSLP-13-0083</a>	Multimodal treatment	<i>Facilitation:</i> Reading comprehension Phonological processing	Verbal (phonemes and syllables), pictures, writing (letters)	Verbal (motor placement descriptions), verbal (phoneme discrimination), verbal (repetition), verbal (phoneme/letter association)	Verbal (phonemes and syllables), auditory (phoneme discrimination)	Part of training	n/a
Rose, M. L., Mok, Z., Carragher, M., Katthagen, S., & Attard, M. C. (2015). Comparing multi-modality and constraint-induced treatment for aphasia: a preliminary investigation of generalisation to discourse. <i>Aphasiology</i> , 30(6), 678–698. <a href="https://doi.org/10.1080/02687038.2015.1100706">https://doi.org/10.1080/02687038.2015.1100706</a>	Multi-Modality Aphasia Therapy	<i>Facilitation:</i> Spoken expression (discourse)	Pictures	Modeling verbal, gesture, drawing, written	Verbal (repetition), verbal (oral reading), drawing, written, gesture	On errors	n/a
Thomson, J. (2012). <i>Assessing the benefits of multimodal rehabilitation therapy for aphasia</i> (Master's dissertation). The University of Manchester, England.	Multimodal rehabilitation therapy Multimodal item focused therapy	<i>Facilitation:</i> Spoken expression (noun retrieval, verb retrieval)	1. Verbal 2. Verbal 3. Verbal (questions), picture, written 4. Picture, written 5. Written (letters) 6. Written 7. Verbal	Verbal feedback or modeling	1. Pointing to picture 2. Pointing to correct written word 3. Verbal (yes/no semantic questions) 4. Verbal 5. Written (unscramble) 6. Verbal 7. Verbal (repetition)	Part of training	n/a

Denman, A. (2017, September). <i>Multi-modal errorless learning functional naming therapy: A single case study</i> . Poster presented at the Royal College of Speech & Language Therapists Conference, Glasgow, Scotland.	Multi-modal errorless learning functional naming therapy	<i>Facilitation:</i> Spoken expression (noun retrieval)	objects, photos, written words and spoken	Verbal	Verbal (repetition)	n/a, only on input	n/a
Dunn, I. (2010). <i>The effects of multimodality cueing on lexical retrieval in aphasic speakers</i> (Doctoral thesis). William Paterson University, Wayne, NJ.	Multimodality cueing	<i>Facilitation:</i> Spoken expression (noun retrieval)	Pictures	Modeling of gesture as needed along with semantic or phonological cues	Verbal (no evidence that subject produced gesture)	On errors	n/a
Hoodin, R. B., & Thompson, C. K. (1983). <i>Facilitation of verbal labeling in adult aphasia by gestural, verbal, or verbal plus gestural training</i> . Presented at the Clinical Aphasiology Conference, Phoenix, AZ.	Multimodality training	<i>Facilitation:</i> Spoken expression (noun retrieval)	Not stated	Not stated	Verbal, gesture	Part of training	n/a
Kendall, D. L., Oelke, M., Brookshire, C. E., & Nadeau, S. E. (2015). The influence of phonomotor treatment on word retrieval abilities in 26 individuals with chronic aphasia: An open trial. <i>Journal of Speech, Language, and Hearing Research, 58</i> (3), 798–15. <a href="https://doi.org/10.1044/2015_JSLHR-L-14-0131">https://doi.org/10.1044/2015_JSLHR-L-14-0131</a>	Multimodal therapy	<i>Facilitation:</i> Spoken expression (noun retrieval)	Mouth pictures + verbal (phonemes), mouth pictures + written letters	Provides placement descriptions, discriminations choices, repetition and sound/letter association	Verbal, objects (arranging colored blocks), pointing (written letters)	Part of training	n/a
Rose, M. L., Attard, M. C., Mok, Z., Lanyon, L. E., & Foster, A. M. (2013a). Multi-modality aphasia therapy is as efficacious as a constraint-induced aphasia therapy for chronic aphasia: A phase 1 study. <i>Aphasiology, 27</i> (8), 938–971. <a href="https://doi.org/10.1080/02687038.2013.810329">https://doi.org/10.1080/02687038.2013.810329</a>	Multi-Modality Aphasia Therapy	<i>Facilitation:</i> Spoken expression (noun retrieval)	Pictures	Modeling verbal, gesture, drawing, written	Verbal (repetition), verbal (oral reading), drawing, written, gesture	On errors	n/a
Weill-Chounlamountry, A., Capelle, N., Tessier, C., & Pradat-Diehl, P. (2013). Multimodal therapy of word retrieval disorder due to phonological encoding dysfunction. <i>Brain Injury, 27</i> (5), 620–631. <a href="https://doi.org/10.3109/02699052.2013.767936">https://doi.org/10.3109/02699052.2013.767936</a>	Multimodal therapy	<i>Facilitation:</i> Spoken expression (noun retrieval)	1. Pictures, written (scrambled letters) 2. Written, verbal (phonemes, syllables, words) 3. Written 4. Picture 5. Picture	Not stated	1. Written (unscramble) 2. Verbal (repetition) 3. Written (copying), verbal 4. Written, verbal 5. Verbal	Part of training	n/a
Rebstock, A. M. (2014). <i>Effects of semantic feature analysis + multimodal communication program for word retrieval and switching behavior in primary progressive aphasia</i> (Doctoral dissertation). Duquesne University, Pittsburgh, PA.	Multimodal Communication Program	<i>Facilitation:</i> Spoken expression (noun retrieval) <b>Total Communication</b> (spoken expression, gesture, drawing)	Pictures	Modeling verbal, gesture and drawing	Verbal, gesture, drawing	Part of training	n/a
Attard, M. C., Rose, M. L., & Lanyon, L. E. (2013). The comparative effects of Multi-Modality Aphasia Therapy and Constraint-Induced Aphasia Therapy-Plus for severe chronic Broca's aphasia: An in-depth pilot study. <i>Aphasiology, 27</i> (1), 80–111. <a href="https://doi.org/10.1080/02687038.2012.725242">https://doi.org/10.1080/02687038.2012.725242</a>	Multi-Modality Aphasia Therapy	<i>Facilitation:</i> Spoken expression (noun retrieval) <b>Total Communication</b> as contingency	Pictures	Modeling verbal, gesture, drawing, written	Verbal (repetition), verbal (oral reading), drawing, written, gesture	On errors	n/a

McCarthy, S. E. (2004). <i>The effects of a multimodality approach on sentence production using response elaboration training with a reading component on aphasic patients</i> (Doctoral dissertation). East Tennessee State University, Johnson City, TN.	Multimodality approach Multimodality treatment	<i>Facilitation:</i> Spoken expression (sentences)	Pictures, written	Verbal models	Verbal (sentence description), verbal (oral reading), unscrambling written words	Part of training	<i>n/a</i>
Thompson, C. K., & McReynolds, L. V. (1986). <i>Wh</i> interrogative production in agrammatic aphasia: An experimental analysis of auditory-visual stimulation and direct-production treatment. <i>Journal of Speech and Hearing Research</i> , 29(2), 193–206.	Multimodal stimulation	<i>Facilitation:</i> Spoken expression (sentences)	Pictures, written words, verbal	Providing verbal stimuli	Verbal (repetition), verbal (wh-question)	<i>n/a</i> , only on input	<i>n/a</i>
Henning, D. M. (2016). <i>Music and multimodal stimulation (M-STIM): A dynamic approach to increasing expressive and receptive language in severe global aphasia</i> (Master's thesis). Northern Illinois University, DeKalb, IL.	Music and Multimodal Stimulation (M-STIM)	<i>Facilitation:</i> Spoken expression (sentences) Auditory comprehension	Sensory/tactile, pictures, video, objects,	Modelled melodic target	Melodic verbal output	<i>n/a</i> , only on input	<i>n/a</i>
Rose, M. L., & Sussmilch, G. (2008). The effects of semantic and gesture treatments on verb retrieval and verb use in aphasia. <i>Aphasiology</i> , 22(7-8), 691–706. <a href="https://doi.org/10.1080/02687030701800800">https://doi.org/10.1080/02687030701800800</a>	Multi-modal semantic treatment	<i>Facilitation:</i> Spoken expression (verb retrieval in sentences)	Pictures	Modeling verbal and gesture	Verbal + gesture	On errors	<i>n/a</i>
Fink, R., Brecher, A., Sobel, P., & Schwartz, M. (2005). Computer-assisted treatment of word retrieval deficits in aphasia. <i>Aphasiology</i> , 19(10-11), 943–954.	Multi-modality cueing Multi-modality matching	<i>Facilitation:</i> Spoken expression (verb retrieval)	Pictures (cueing)	Software provides verbal or written cueing	Verbal (naming) Select written and/or spoken word (matching)	On errors	<i>n/a</i>
Kearns, K. P., Simmons, N., & Sisterhen, C. (1982). <i>Gestural sign (Amer-Ind) as a facilitator of verbalization in patients with aphasia</i> . Presented at the Clinical Aphasiology Conference, Oshkosh, WI. Retrieved from <a href="http://eprints-prod-05.library.pitt.edu/725/1/12-23.pdf">http://eprints-prod-05.library.pitt.edu/725/1/12-23.pdf</a>	Multimodality training	<i>Facilitation:</i> Spoken expression (verb retrieval)	Pictures	Providing gesture and verbal for imitation	Verbal + gesture	Part of training, then on errors	<i>n/a</i>
Thiel, L., Sage, K., & Conroy, P. (2015). Comparing uni-modal and multi-modal therapies for improving writing in acquired dysgraphia after stroke. <i>Neuropsychological Rehabilitation</i> , 1–29. <a href="https://doi.org/10.1080/09602011.2015.1026357">https://doi.org/10.1080/09602011.2015.1026357</a>	Multi-modal therapy	<i>Facilitation:</i> Writing (words)	Verbal	Providing verbal stimuli, feedback	1. Pointing to written word, then verbal, writing (copying) 2. Pointing to symbol representing word, then verbal, writing 3. Pointing to written word, then verbal, writing (copying)	Part of training	<i>n/a</i>