

Supplemental Material S1. Selected studies with reported maintenance and/or generalization of treatment for PPA.

Author/Year of Publication	PPA	Type of Intervention	Gains Immediately Post-Intervention	Maintenance	Generalisation
Beales et al. 2021	4 Sv 4 Lv 4 AD	Clinician-prompted, self-prompted & communication partner-prompted cueing strategies (semantic, autobiographical, phonological & orthographic)	YES: Nouns, Verbs & Adjectives: improvement for all three groups	YES: 6 wks post-tx for all three groups	YES: Within-level generalization to untreated items found for all three groups
Beeson et al. 2011	1 Lv	24 hrs with clinician + 15 hrs of homework 30 items x 12 categories Pictures with labels, sub-categorization and elaboration used: generative naming – intense schedule	YES: Pt appeared to learn self-cueing strategies	YES: 6 mos-post	YES: 1) confrontation naming for untreated items, 2) narrative speech (increased speaking rate & information density), 3) day-to-day spoken communication as reported by the patient & his family
Bier et al. 2009	Sv	8 items, phonological-semantic therapy with cueing hierarchy and semantic feedback. Alternating tx: ABCBCBCA	YES: names and specific attributes NO: general attributes	YES: up to 5 weeks	NO: no generalization within or between semantic categories on naming and letter fluency tasks
Cadorio et al 2017	PPA	Review of 25 treatment studies published 2000-2016	YES	YES: not variant - dependent	YES but variant-dependent: Rigid and context-dependent in Sv; Better in Lv & Nfv
Croot 2018		Comparison of 5 tx methods 1-Look, listen, repeat 2-Cueing techniques 3-Semantic tx 4-Lexical retrieval in context 5-Standard naming tx	YES Benefits of prophylactic tx	YES: varied according to tx, No pattern	Limited: suggested that tx should focus on maintenance of core vocabulary
Dressel et al. 2010	1 Sv	Sem+phon cueing; 4 wk intensive; pre-post; +fMRI; ABBA design	Right inferior and superior frontal gyrus changes	YES: at 2 mos	NO: no generalization to untreated items on a naming task

Frattali 2004	1 Sv	Conversation about semantic features and associates of photographed items. 12 x 2 hour sessions over 3 months; Errorless approach	YES: for treated nouns and verbs	NO: when tested 3 mos post-tx	NO: no generalization to novel sets of untreated nouns and verbs
Graham et al. 1999, 2001	Sv	Practicing at home exemplars from semantic categories (name + picture), 30 mins/day x 6 days	YES	YES: at 10 and at 20 weeks	NO: no improvement on category fluency for unpracticed categories/items
Green Heredia et al. 2009	Sv	Computer based presentation of picture alone then picture + read aloud written name, home practice daily for 1 month; Errorless approach	YES	YES: at 6 mos.	YES: on naming of alternative exemplars (pictures) of treated items, but only if the exemplar was visually similar to the picture used in therapy
Henry et al. 2008	1 Nf 2 Sv	Guided retrieval on semantic tasks/strategic element/multiple baseline design	PA1-large effect PA2-small effect	YES: PA1 at 3wks + 4mos ; NO: PA2 YES: LH at 3 wks and 4 mos	YES: in one of the PPA patients (PA 1) who showed improvement in semantic fluency for untreated categories, but the effect was transient (not present at 4-month follow-up)
Henry et al. 2019	9 Sv 9 Lv	Naming therapy for two groups: 1x week & 2x week Daily home practice	YES, regardless of tx frequency	YES: Up to 1 yr post-tx for some	YES: Generalization to untx'd items up to 6 mos post-tx
Hoffman et al. 2015	3 Sv	Naming with two manipulations: Varied order of administration Multiple exemplars of a single item	YES for MB & JW NO for MT	YES: for MB& JW at 1wk, 4 wks, 4 mos a 7 7 mos NO: for MT	NO for either participant
Jokel at al. 2006	1 Sv	Picture + reading name aloud + read personally relevant description. Home practice 30 min/day x 6 days; Errorless approach	YES, better recall for items with partial sem knowledge	YES: at 1 mo	NO: there was little improvement in control (untreated) items on picture naming
Jokel & Anderson 2008	3 Sv	Errorless learning of 4 sets of 15 words each	YES: improvements in naming and comprehension	YES: at 1 and 3 mos	NR

Jokel & Anderson 2009b, 2012	7 Sv	Pre-post design X 4 conditions : Errorless-Passive Errorless-Active Errorful-Passive Errorful-Active	YES: all but one participant (Sv profile but later diagnosed with CADASIL)	YES: at 1 & 3 mos, Some improvement on sentence production	YES: untreated items on semantic fluency tasks & on naming. 3 patients reported use of re-learned words in daily life
Jokel et al. 2007; 2010	1 Sv	Computer-based tx; Pictures paired with labels; Multiple baseline across behaviours, unknown + known tx; known untreated; EL	YES Large effect	YES: at 1&3 mos.	YES: treated words in a new context; NO on untreated items. Limited gains on a sentence production task and semantic fluency tasks (treated items produced)
Jokel et al. 2006b 2009a	2 Nf	Multiple baselines across behaviours	YES Over 80% improvement	YES: at 1 mo NO: at 6 mos.	YES: on a syntactic/sentence production task which did not include treated items. NO: on untreated items in a naming task.
Krajenbrink et al 2020	1 Sv	RRiPP + COEN (delivered via Skype)	Improvement in spoken and written word retrieval	YES: Better when written words were required	YES: on comprehension with COEN
Lavoie et al 2020	5 PPA	Self-administered tx, ABA design with 4 lists; 1-trained functional words, 2-trained words from picture database, 3-exposed but not trained, 4-control set	Improvement for all 5 participants	YES: 2 mos post-tx	Some evidence of generalization in conversation
Meyer et al 2019	PPA	Phonological & orthographic tx of naming x 6 mos	YES	YES: Up to 15 mos for all More robust in orthographic tx for Sv	NR
Newhart et al. 2009	1 Lv 1 Sv	Reading name of pictured object + repeating; organized by category; pre-post test	YES for naming in both patients	NR	YES: for Lv on naming of untreated items in treated & untreated, categories. No change in reading comprehension NO for Sv

Robinson et al. 2009	2 Sv	Ltd # of sessions Object naming, definition, and use were trained	YES: varied HD: improved on naming definitions and use; VH: definitions	YES: At 1 mo: HD for Use Naming & Definitions NO: VH	NR
Savage et al. 2013	4 Sv	Repetitive practice of word-picture pairing carried at participants' homes	YES: Improvement in all participants regardless of severity	YES: Large effects for all participants at 3 wks and 7-8 weeks for SD1 & SD3.	NR
Savage et al. 2014	5 Sv	2 month online word training	YES: all participants on naming of treated items	NR	YES: for tx'd words; 4/5 participants improved on a video description task. Mild pts on following verbal instructions, severe pts on word-picture matching
Savage et al. 2015	9 Sv	2 month computer-based program with 75-100 words; Photos combined with audio cues	YES: all participants on naming of treated items	YES: 5 pts 2 mos post & 6 pts 3 mos post; Booster sessions added	NR
Schneider et al. 1996	1 Nf	Verbal + gesture training of targets in sentences x 18 sessions. Home practice with pictures of gestures; Note: verb production in context of sentences (not anomia tx per se)	YES	YES: gestures NO: words at 3 mos	YES: improved verb production (for treated tenses) with untreated verbs in sentence production task
Snowden & Neary 2002	2 Sv	Errorless pairing of picture with spoken and written name; Studied picture, written name and information relevant to personal experience in 2 treatment sessions. Home practice 20 min/day x 3 weeks; EL; pre-test – pos-test, cued vs. uncued	YES: for items with partial sem knowledge; marginal for items with no knowledge YES: on day 20	YES: up to 8 mos correlated with meaningfulness (autobiographical experiential association)	NO: naming of treated items in a new context (different presentation order, different coloured paper & on loose sheets of paper instead of the test booklet); NR for KB

Trebbastoni et al. (2013)	1 Lv	rTMS delivered over the left DLPC Pre-post real vs. sham No items that were specifically trained.	Improvement on word generation and scores on written texts	NO (after 7 days) on word generation; YES : on written text measures	Not measured but some improvement in word retrieval & crossword puzzles reported following real, but not the sham session.
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Note. Tx = therapy; Sv = semantic variant PPA; Lv = logopenic variant PPA; Nf = nonfluent/agrammatic variant PPA; RRiPP = Repetition & Reading in the Presence of a Picture; sem = semantic; phon = phonological; COEN=Conceptual Enrichment.