Script Training and Social Outcomes for Persons with Aphasia: A Systematic Review

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Background

Aphasia is an acquired language impairment resulting from stroke, brain injury, or progressive disease that affects all four domains of language to varying degrees: reading, writing, spoken language, and comprehension thereof. Script training is a functional treatment approach that addresses both routine and occasional communication needs by implementing intensive rehearsal of highly-personalized monologues and/or dialogues until the scripts become sufficiently automatized that the person with aphasia can access these fluent "islands of automatic speech" for use in real-life discourse that is natural and personally-relevant (Youmans. Holland, Muñoz & Bourgeois, 2005). Initially developed by Holland and colleagues to facilitate verbal communication on client-selected topics for individuals whose speech production is no longer automatic, script training is based on the instance theory of automatization, which maintains that skills must be practiced in a holistic fashion, rather than in a component-based manner. Studies have supported the use of script training for individuals with aphasia and apraxia of speech due to demonstrated improvements in natural discourse and greater communicative competence. However, the current literature inconsistently addresses the outcomes generated for persons with aphasia following script training intervention, nor has a comprehensive analysis consolidating findings on this topic been conducted to date.

Objective

The purpose of this systematic review is to answer the following research question: In patients with acquired aphasia, how does script training affect social interactions?

Methods

Databases Searched: PubMed; CINAHL; Embase Advanced Search Search Terms:

<u>Aphasia:</u> acquired aphasia; aphasic; aphasia syndrome(s); verbal aphasia (syndrome[s])

- <u>Script training</u>: script; scripting; script treatment; script intervention Inclusion Criteria:
- <u>Script training administered via</u>: teletherapy; individual sessions; group sessions; no-tech; high-tech; computer-based; video-implemented
- <u>Study designs</u>: single-subject; uncontrolled; controlled; experimental; nonexperimental
- <u>Outcomes:</u> accuracy; intelligibility; grammaticality; participation; confidence; social appropriateness; personalization; personal relevance
- <u>Population</u>: acquired aphasia; bilingual (where one of the languages is English); adults; anomic aphasia; anomia; anterior aphasia; non-fluent aphasia

Exclusion Criteria:

- <u>Script training</u> in combination with other interventions
- · Study designs: articles without original research; dissertations
- <u>Outcomes</u>: any non-social outcomes
- <u>Population</u>: Landau-Kleffner Syndrome; acquired (epileptic aphasia; aphasia with convulsive disorder; epileptiform aphasia); children; ageusic aphasia; amnesic aphasia; primary progressive aphasia (PPA)

Review Process: After running our search terms in all three databases, duplicate results were removed. Independent title/abstract reviews of all articles were conducted by both authors with an inter-rater reliability of 94%, followed by a full-text review of all remaining articles that demonstrated 79% inter-rater reliability; disagreements were settled through consensus. Independent quality appraisals were conducted for all eligible sources consistent with our criteria.

Kesuits								
	Social Participation and Appropriateness	Confidence	Accuracy of Scripts	Ease and Naturalness of Speech Production	Personal Relevance	Communication Partner Perspective	Speaking Rate/Fluency	Intelligibility and Grammaticalit
Youmans et al. (2011)	!	I	!	I	I	-	!*	-
Cherney et al. (2011)	!*	!*	-	-	!	!	!	!*
Youmans et al. (2005)	! (p < .001)	-	!*	I	!	-	!*	-
Goldberg et al. (2012)	!	I	!* (Effect sizes: 1.65, 4.97)	-	I	-	!* (Effect sizes: 6.52, 13.08)	+* (Effect sizes: 1.9 2.84)
Cherney et al. (2008)	!*	!	I	-	I	!	+*	I
Manheim et al. (2009)	-	-	-	! (pre-post: p = .038, effect size = .43; pre- followup: p = .003, effect size = .67)	I	-	-	-
Cherney et al. (2015)	-	-	! (baseline-post: p < .001 [personally- relevant words], p < .005 [generic words])		! (p = .059, effect size: .9)	ŀ	-	
Cherney et al. (2014)	-	-	! (baseline-post: p < .0125, effect size: 1.49; baseline- maintenance: p < .0125, effect size: 1.18)	-	I	-	!* (p < .0125)	-
Grasso et al. (2019)	-	-	!* (overall treatment: p = .oo4; pre- followup [Spanish]: d = 14.14; pre- followup [English]: d = 4.27)	-	I	I	! (p = .og)	! (intelligibility: r .oo4; grammaticality = .oo8)
Pro	cedure	s and	Parti	cinan	ts _	Symbol	Signi	ficance



References available upon request.

Discussion

Our systematic review aimed to examine social outcomes as a result of script training in persons with aphasia. The current literature indicates that script training improves numerous social outcomes both during and after treatment. Some studies examined social outcomes directly in a randomized controlled trial or single-subject design to generate quantitative data, while others analyzed patient-reported social outcomes qualitatively by interviewing the person with aphasia and/or their communication partners. Overall, findings support the use of both in-person and computer-based script training as a beneficial, efficacious intervention option that aids positive social outcomes for persons diagnosed with fluent and non-fluent aphasia syndromes and other comorbidities. Evidence emerged for generalization to untrained

conversational exchanges, improved discourse in natural conversation, and increased scores on formal language and communication testing. These were noted qualitatively and quantitatively after script training intervention in all represented intervention delivery methods. In addition, there were reports of script training contributing to augmented communicative competence and overall ease of communication for the person with aphasia with or without other comorbid conditions.

Positive social outcomes reported:

- Increased rate of speech
- Increased social participation
 Higher levels of confidence
- Higher levels of confidence
 More complex/coherent grammatical productivity
- Increased ease/naturalness of speech production

Limitations of the current literature:

- Notable variability between and within participants
- Higher numbers of single-subject designs
 - Small sample sizes
 Diverse nature of aphas
 - Diverse nature of aphasia presentationsInherent subjectivity of measuring social outcomes

Limitations of our review:

- Excluded grey literature
- Unable to obtain 2 articles of potential merit
- Failure to meet 80% inter-rater reliability criterion during full-text review

Future research implementing larger sample sizes, experimental control, higher statistical power, and longer treatment duration is warranted to better investigate the efficacy of script training for individuals with aphasia and other comorbidities.

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