Title: A comparison of treatment outcomes following whole-task and part-task methods for training scripts

Script training is a treatment designed to increase the fluent speech production for specific functional purposes for individuals with nonfluent aphasia. The goal of script training is to generate fluent speech in a limited context by restoring portions of automatic, natural language production into the speech of individuals with aphasia. A whole task approach (e.g. facilitating production of a set of related sentences as a unit) has resulted in fluent production of scripts that generalizes to functional contexts (Youmans, Holland, Munoz, & Bourgeois, 2005). Further research is necessary to determine how script training compares to traditional linguistic-based therapy. Though script training is intended to improve functional communication, some participants have demonstrated generalized improvement in language, as evidence by increase in verbal output from pre-test to post-test discourse samples (Powers and Munoz, 2004).

The purpose of this study is to explore how treatment outcomes from a whole-task script training method compare with outcomes from part-task (linguistic-based) method. Specifically, we examined response to treatment, generalization to functional contexts, and general increase in language output.

Participant Description. A multiple baseline across behaviors single-subject design was used to examine the effects of the treatments. DP was a 46 year-old man 2 years post onset of a left CVA. He passed a hearing screening, a simple screening for visual acuity, an oral mechanism screening, and the *Mini-Mental State Exam.*

Pre Treatment Assessment. DP exhibited Broca's aphasia as demonstrated by performance on the *Western Aphasia Battery* (AQ=54). Additionally, narrative and conversational samples were obtained using the *Cookie Theft* picture from the *Boston Diagnostic Aphasia Examination (BDAE)* and the *Picnic* picture from the *Western Aphasia Battery*. Conversation samples were obtained by asking DP to provide the following information: "Tell me about your most frightening experience," "Tell me about your stroke," or "Tell me what you usually do on Saturdays."

Script Training. Three scripts were developed as a collaborative effort between the clinicians and DP. We identified three scripts that were unique, relevant, and functional. Scripts consisted of 4-5 syntactically complete sentences. One script was used in whole-task training (Script 1), one in part-task training (Script 2), and one served as an untrained probe (Script 3). DP attended 50 minute sessions two times per week. Additionally, 15 minutes a day he complete at home practice consistent with each treatment method. Scripts were probed at the start of each treatment session and audiotaped and transcribed for analysis using the Systematic Assessment of Language Transcription (SALT). Script production was analyzed for the following dependant variables: total number of main body words, number of maze words, and percentage of mazes and frequency counts for designated word codes (for example, Correct Script Word [CSW]).

Whole-Task Training. Script 1 was trained using the whole-task approach. Repeated drill and a self-cuing hierarchy was used promote fluent production of the target script. Cueing sheets (see Figure 1 for an example) for each sentence were placed in separate pages of a talking photo album. Additionally, the use of a talking photo album allowed for the use of an audio cue (the clinician producing each sentence). The first script sentence was practiced; additional sentences were added in a forward chaining procedure when 100% accuracy had been reached in a single session following three consecutive attempts. Auditory and visual cues to support repetitive drill were controlled by the participants (i.e. the patient was taught to initially use the most facilitative

cue [audio] then work his way up and down the hierarchy depending on effort) The criterion for attainment of script was 100% script accuracy during an independent probe.

DP's baseline performance on Script 1 was established over three sessions (Figure 3). He reached the 100% accuracy criterion following 8 treatment sessions. Accuracy of script production, as measured by percent correct script words (script words produced/total script words) was generally maintained at or above 80% after completion of training. The WAB was re-administered following Script 1 Training and DP demonstrated an increase in AQ (65, + 11 points). Additional data will be reported regarding pre- and post- test performance on discourse tasks, as well as additional measures obtained on script performance (such as error type). Interview with the participant indicated that he was using the script in a variety of functional contexts (for example, at church and on the phone).

Part-Task Training. The syntactic structures of Script 2 were trained using a modified version of the Sentence Production Program for Aphasia (Helm-Estabrooks & Nicholas, 2000). The SPPA is a treatment program with hierarchically organized sentence types (beginning with easier sentences), 15 sentences per level. The syntactic structure is first trained with a model, then elicited with a cue (see Figure 2 as an example). The script sentences were integrated to SPPA sentences with a comparable syntactic structure. The criterion for attainment of script was 100% script accuracy during an independent probe.

DP's baseline performance on Script 2 was established over eleven sessions (Figure 4). Treatment was initiated at SPPA sentence type 4 (Wh- questions) and included the script sentences (also Wh- questions, see example Figure 2). DP exhibited frustration at Level 4 and could not score above a 2 (out of 15); therefore, treatment at SPAA Sentence Type 1 was initiated. DP progressed through the SPPA levels (using criteria provided in the treatment manual) until level 4 was reached, at which point the script sentences were once again integrated with the comparable SPPA sentences. DP met criteria for completion of SPAA level 4 which included correct production of Script sentences. However, correct production within the context of the SPPA cuing did not transfer to independent probes (Figure 4). DP did not reach the 100% criterion. Accuracy of script production did not exceed 11%. The WAB was re-administered following Script 2 training and DP demonstrated a minimal change in AQ (63, -2 points). Additional data will be reported regarding pre- and post- test performance on discourse tasks, as well as additional measures obtained on script performance (such as error type).

References

Helm-Estabrooks, N., & Nicholas, M. (2000). *Sentence Production Program for Aphasia*. Austin, TX: Pro-ed.

Youmans, G., Holland, A., Munoz, M. L., & Bourgeois, M. S. (2005). Script training and automaticity in two individuals with aphasia. *Aphasiology, 19*(3-5), 435-450.

Powers, H. and Muñoz, M.L. (November, 2004) Treatment outcomes following script training for Broca's aphasia. Poster session presented at the annual convention of the American Speech Language and Hearing Association.

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M_ n____ i_ X_____

My name is XXXX.

Figure 1. Example of the self-cuing hierarchy for the first sentence of Script 1.

Figure 2. SPPA cue for sentence 1 of Script 2. [Patient Name] meets someone for the first time, so he asks, "What is your name?" What does he ask?
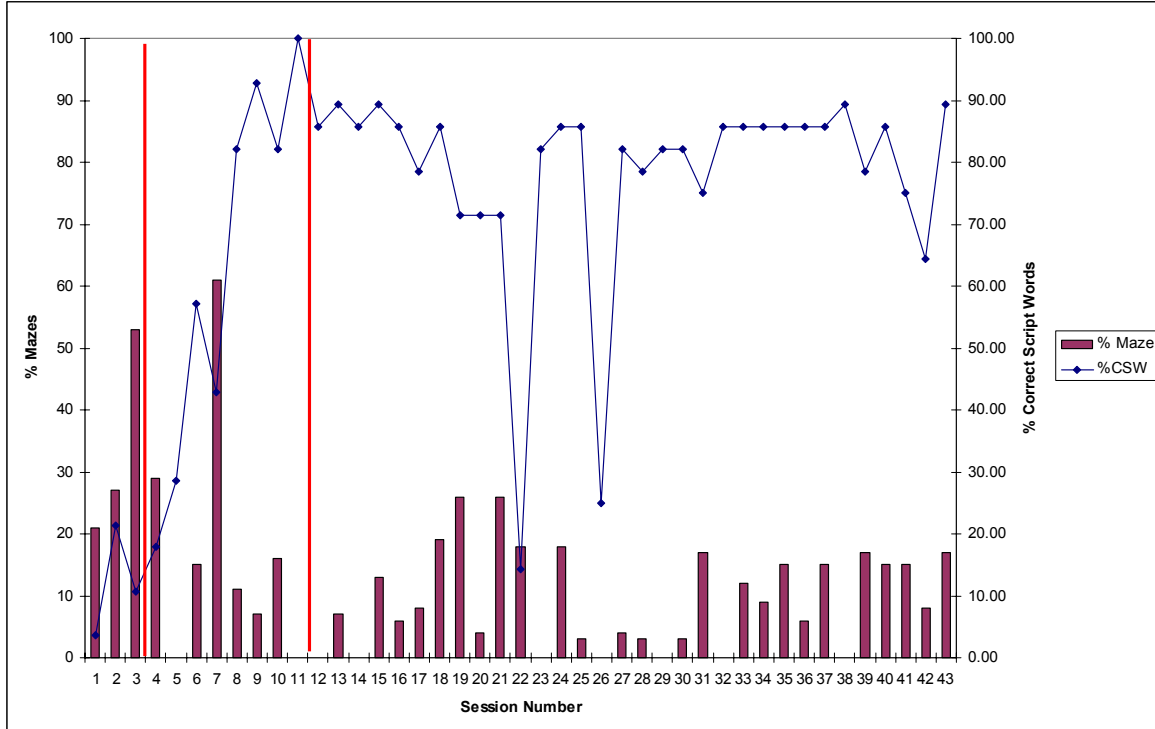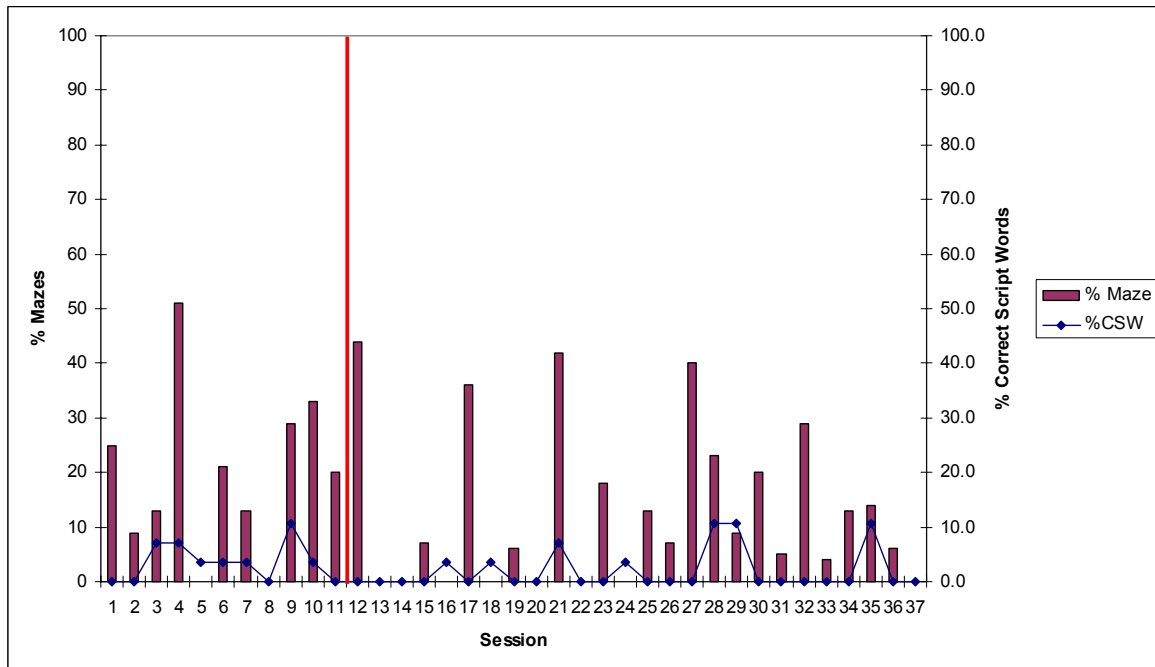
Figure 3: Script 1

Figure 4. Script 2