Script training and its application to everyday life observed in an aphasia center

Introduction

Script training focuses on improved production of personally relevant monologues and dialogues through intensive practice. Commonly reported components of script training include use of personally relevant or functional scripts, a structured cueing hierarchy, and intensive rehearsal of scripted lines to promote automaticity (Youmans, Holland, Munoz, & Bourgeois, 2005; Lee, Kaye, & Cherney, 2009; Youmans, Youmans, & Hancock, 2011; Goldberg, Haley, & Jacks, 2012; Fridriksson et al., 2012). Fridriksson et al. (2012) also trained a series of common scripts to study neurophysiological changes that result from such training.

This proposal presents results from four persons with aphasia (PWA) who received script training in an aphasia center, where there is opportunity to observe the effect of that training on everyday life. A secondary goal is to examine what, if any, individual, intervention, or environmental factors might affect a PWA's ability to benefit from such training.

Method

Participants

The four participants described here were selected from 14 PWA who received individual script training. Four SLPs familiar with the cases independently rated the PWA as *successful* (i.e., benefited from scripting with carryover outside of treatment), *borderline* (i.e., benefited from scripting with minimal carryover), or *unsuccessful* (i.e., unable to functionally use scripts). Consensus was reached for four PWA identified as *successful* and three PWA identified as *unsuccessful*. Of those, three *successful* PWA (P1-P3) and one *unsuccessful* PWA (P4) were randomly selected for analysis. All four had chronic aphasia resulting from a left-hemisphere stroke. Table 1 contains demographic information.

Treatment

Treatment sessions were twice weekly for 50-minutes. During sessions, one script was primarily targeted; however, older scripts were reviewed in conversational format (e.g., asking script-related questions) or additional therapy activities (e.g., SFA, ORLA) occurred. Participants agreed to a minimum of one hour of home practice daily and self-reported practice time. Written, visual, and auditory cues were provided on notecards, voice recorders, or iPads.

Participants selected topics and wrote scripts with clinician support. Script complexity and a cueing hierarchy were customized. The hierarchy for P1-P3 progressed from choral reading to repetition to independent productions. P4's hierarchy did not include choral reading but added a spaced retrieval component (Fridriksson, Holland, Beeson, & Morrow, 2005) due to observed memory deficits. Script training targeted independent production but use of the iPods/Pads to support retrieval or production of script content was encouraged. Participants were permitted to make errors or use synonyms that were appropriate to the context. The number of sessions required to train each script varied across participants, with a range of 6-19 sessions for the scripts reported here.

Three video recordings were taken prior to and at the conclusion of training each script. During all three pre-training videos and the first two post-training videos, traditional elicitation procedures included having participants read their scripts or tell about the topic with supports available. The third post-training recording was usually elicited by a conversational exchange

related to the topic. The context (i.e., participant reading, retelling with supports, retelling independent) of videos varied across participants and scripts.

Measures

A pool of scripts was identified for each participant. It included the first five trained monologue scripts with at least two pre- and post-video recordings adhering to traditional elicitation procedures. From this pool, two scripts were selected at random for analysis of pre- and post-videos. This resulted in two pre- and two post-videos per participant, per script. Figures 1-4 specify the context of each video.

Videos were transcribed by two researchers unfamiliar with the participants and unaffiliated with the aphasia center but skilled in transcription using AphasiaBank's conventional coding and analysis systems (CHAT and CLAN, respectively) (MacWhinney, 2013). Transcribed samples were compared to a transcribed target script using the SCRIPT program available on CLAN (MacWhinney, 2014). Consistent with training, analysis accepted close approximations (e.g., recognizable phonemic/lexical errors, semantic synonyms) as accurate (MacWhinney, 2014). Coded transcripts were analyzed for percent script words correct, percent script words omitted, and number of words per minute.

Before treatment began, each participant was tested using the battery listed in Table 2. During treatment, participants were retested at approximately six month intervals. Table 3 shows scores from the testing session immediately preceding treatment of the selected scripts and the session that occurred after treatment of these scripts.

Clinicians logged the number of trials, accuracy of productions, and support provided (e.g., clinician provided cues, iPad use) for each script line at each level of the hierarchy. These data guided clinical decisions related to progress through each script.

Results

Figures 1-3 show data for the pre- and post-treatment performance on selected scripts for successful participants (P1-P3). They showed a 29.6%, 65.3%, and 79.5% increase in the percentage of correct script words when averaged across pre- and post-sample measures on both scripts for P1-P3, respectively. Speaking efficiency, measured by the number of words per minute, showed a similar trend toward improvement.

Figure 4 shows results for the unsuccessful participant (P4), which do not reveal the same straightforward improvements. The percentage of correct script words is variable, decreasing by an average of 7% across pre- and post-sample measures for both scripts. Similarly, on the efficiency measure, he produced fewer target-related words per minute following treatment.

Standardized test scores (see Table 3), show slight improvements for P1 across measures, variable performance for P2, a general improving trend across measures for P3, and a decline on all except the CALD-2 for P4.

Discussion

The discussion will focus on: 1) the observed carryover of script training in clinical settings to functional, everyday use in those settings; and 2) those factors that contribute to "success," or lack thereof, with script training in clinical settings and everyday use in those settings. For example, prior to script training, P1's approach was to write words and then attempt to read them aloud, and P3 relied solely on an augmentative and alternative communication app on his iPhone. For both P1 and P3, script training "success" led to an increased ability to speak spontaneously. "Success" for P2 and P3 included increased confidence in their own verbal productions and independent accessing of scripts on an iPhone/Pad to facilitate communication or to self-cue at home and in the community. "Success" increased independence for P3, who used script content to independently navigate mass transit for the first time since his stroke. Success" for P1-P3 included opportunities to engage with others at the aphasia center, at home, and in the community. For P4, lack of "success" was characterized by inconsistent productions of scripts and the inability to generalize use of script content, verbally or with support of mobile technology, within and beyond clinic sessions.

Possible factors contributing to success, or lack thereof, include individual characteristics (e.g., aphasia type or severity, concomitant factors, willingness to use mobile technology to support script training and carryover), intervention characteristics (e.g., number of treatment sessions per script, total time in therapy, amount of home practice), and environmental factors (e.g., opportunities to use script content in novel settings or with novel communication partners). Each of these factors will be discussed for the cases presented.

References

Babbitt E. M., & Cherney, L.R. (2010). Communication confidence in persons with aphasia. *Topics in Stroke Rehabilitation, 17(3),* 214-223.

Fridriksson, J., Holland, A. L., Beeson, P., & Morrow, L. (2005). Spaced retrieval treatment of anomia. *Aphasiology, 19(2),* 99-109.

Fridriksson, J., Hubbard, I., Gudspeth, S. G., Holland, A., Bonilha, L., Fromm, D., & Rorden, C. (2012). Speech entrainment enables patients with Broca's aphasia to produce fluent speech. *Brain, 135,* 3815-3829.

Goldberg, S., Haley, K., & Jacks, A. (2012). Script training and generalization for people with aphasia. *American Journal of Speech-Language Pathology, 21,* 222-238.

Holland, A., Frattali, C, & Fromm, D. (1999). *Communication Activities of Daily Living – Second Edition.* Austin, TX: Pro-Ed, Inc.

Kagan, A., Simmons-Mackie, N., Victor, J.C., Carling-Rowland, A., Hoch, J., Huijbregts, M., Mok, A. (2010). *Assessment for Living with Aphasia (ALA).* Toronto, Canada: Aphasia Institute.

Kertesz, A. (2007). *Western Aphasia Battery – Revised*. San Antonio, TX: PsychCorp.

Lee, J.B., Kaye, R.C., & Cherney, L.R. (2009). Conversational script performance in adults with non-fluent aphasia: Treatment intensity and aphasia severity. *Aphasiology, 23(7-8),* 885-897.

MacWhinney, B. (2013). Part 1: The CHAT program. In *The CHILDS project: Tools for analyzing talk* [Electronic Edition]. Retrieved from http://childes.talkbank.org/manuals/chat.pdf

MacWhinney, B. (2014). Part 2: The CLAN program. In *The CHILDS project: Tools for analyzing talk* [Electronic Edition]. Retrieved from http://childes.talkbank.org/manuals/clan.pdf

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

Youmans, G., Youmans, S. R., & Hancock, A. B. (2011). Script training treatment for adults with apraxia of speech. *American Journal of Speech-Language Pathology, 20(1),* 23-37.

Table 1
Demographic Information

Participant	Gender	Age (years)	Months Post Onset	Years Education	Handedness Prior to onset	WAB-R Aphasia Classification
P1	M	54	84	18	Left	Broca
P2	M	73	96	12	Right	Broca
P3	M	41	94	16	Right	Broca
P4	M	59	41	13	Right	Anomic

Table 2
Test Battery

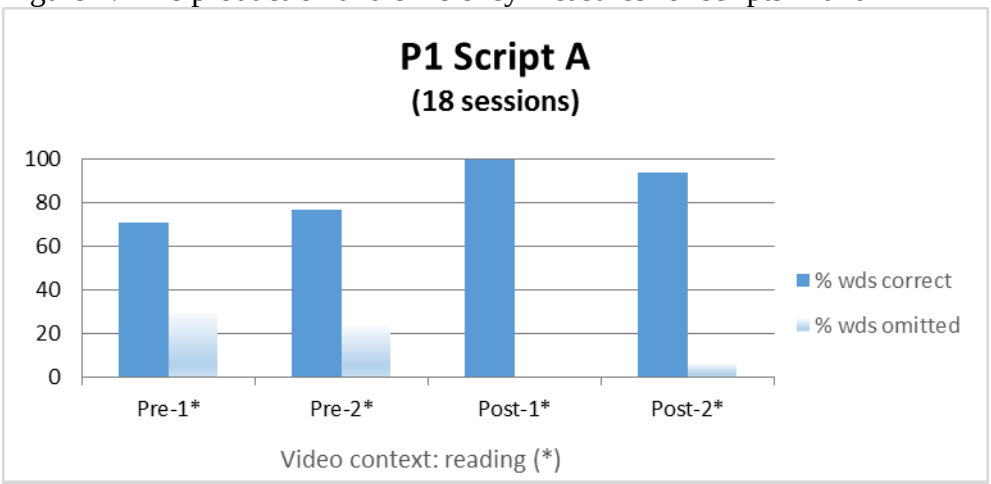
Communication Activities of Daily Living – Second Edition (CADL-2; Holland, Frattali, & Fromm, 1999)
Western Aphasia Battery – Revised (WAB-R; Kertesz, 2007)
Communication Confidence Rating Scale for Aphasia (RIC-CCRSA; Babbitt E. M. & Cherney L.R., 2010)
Assessment for Living With Aphasia (ALA; Kagan et al., 2010)

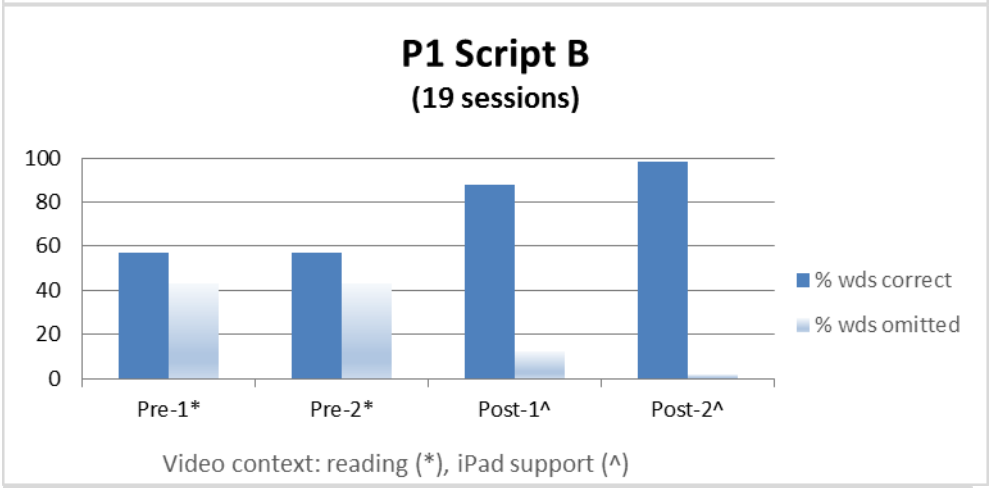
Table 3
Test Battery Scores

	Date	CADL-2 Raw Score	CADL-2 Percentile	WAB-R AQ	RIC-CCRSA Total	ALA Total
P1 Pre-Scripts	1/2012	88	84	55.3	72	2.75
P1 Post-Scripts	12/2012	89	86	59.4	73	2.8
P2 Pre-Scripts	1/2012	66	31	66.1	77	3.1
P2 Post-Scripts	8/2012	73	45	68.2	76	2.95
P3 Pre-Scripts	9/2012	69	38	43.8	49	2.64
P3 Post-Scripts	7/2013	82	65	49.9	58	3.07
P4 Pre-Scripts	5/2011	85	77	80.7	91	3.42
P4 Post-Scripts	11/2011	92	93	74.2	78	2.59

Note: Pre-Scripts testing reported here is based on the closest testing session that occurred prior to treatment on the selected scripts. Post-Scripts testing is based on the closest testing session that occurred after training of the selected scripts.

Figure 1. P1's production and efficiency measures for scripts A and B





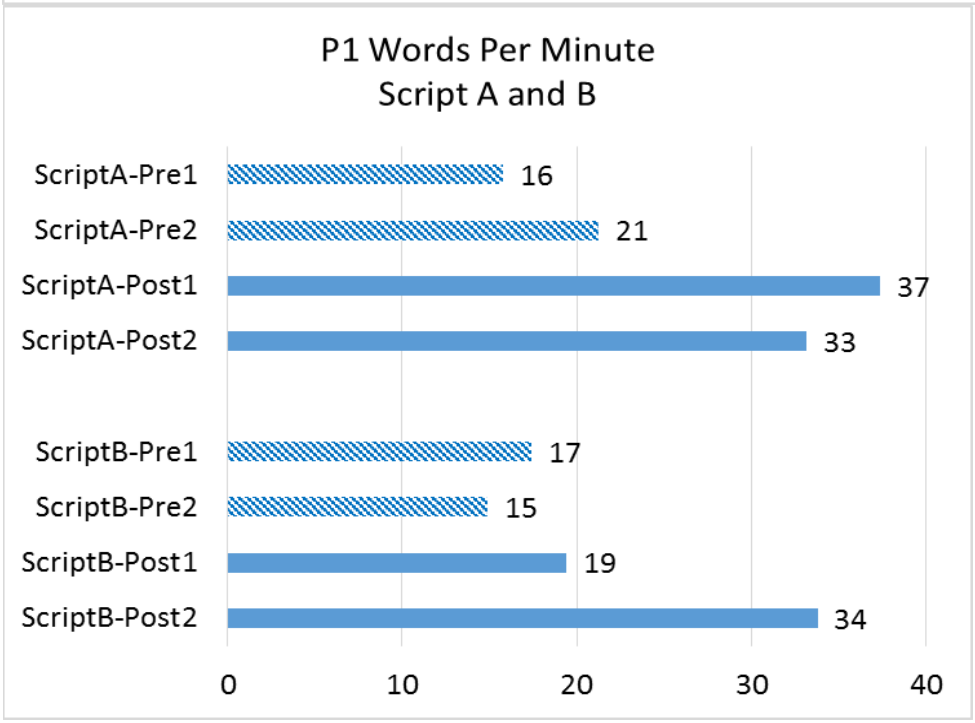
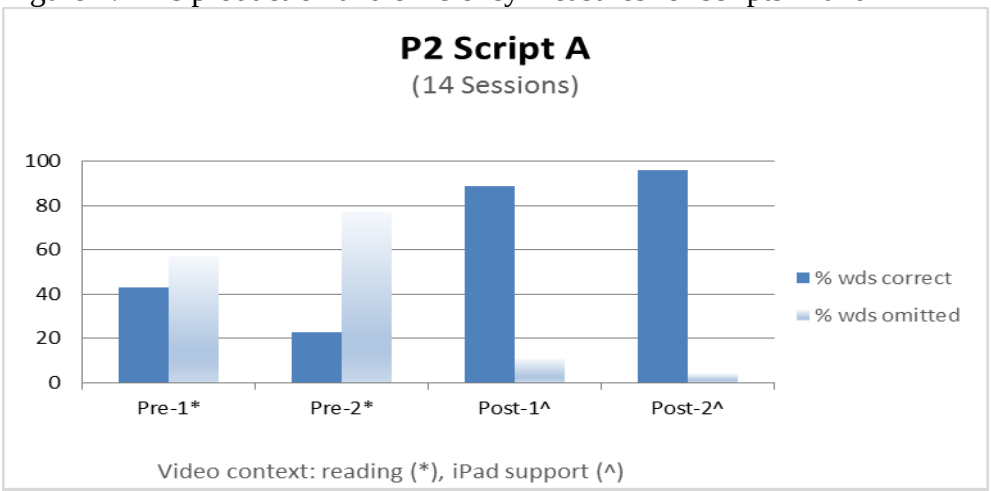
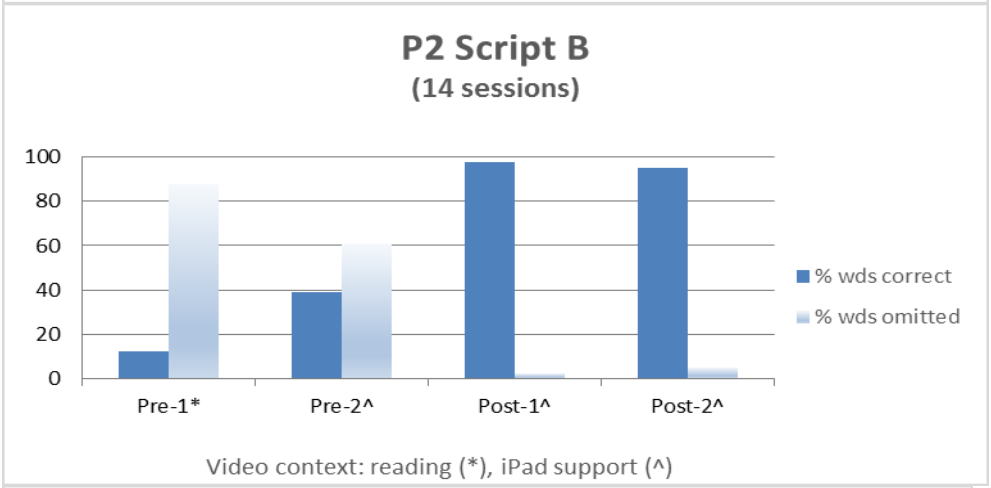


Figure 2. P2's production and efficiency measures for scripts A and B





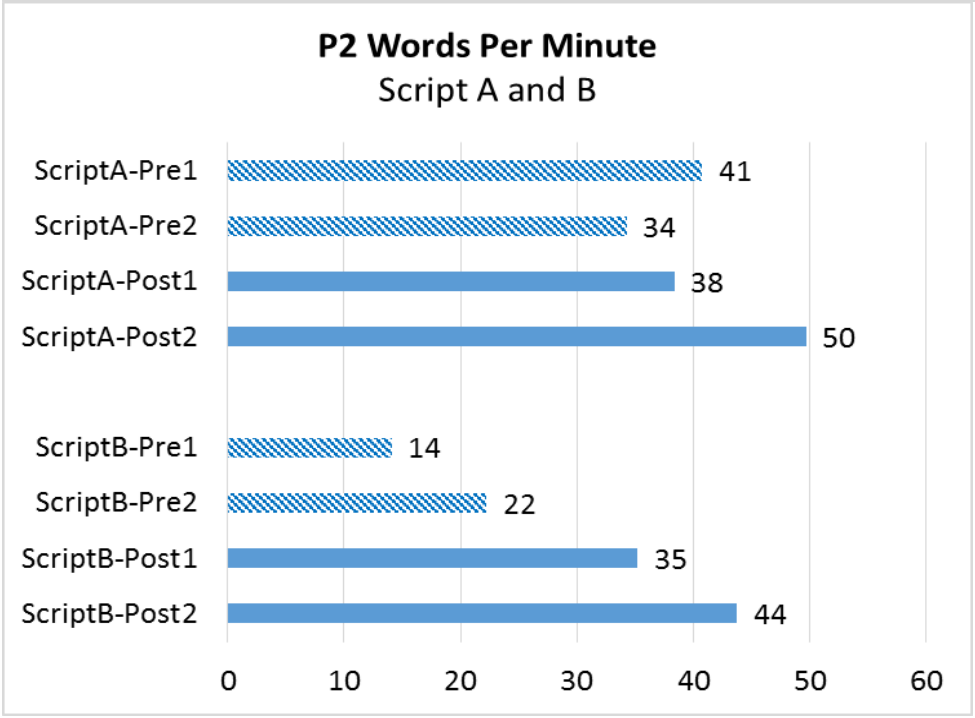
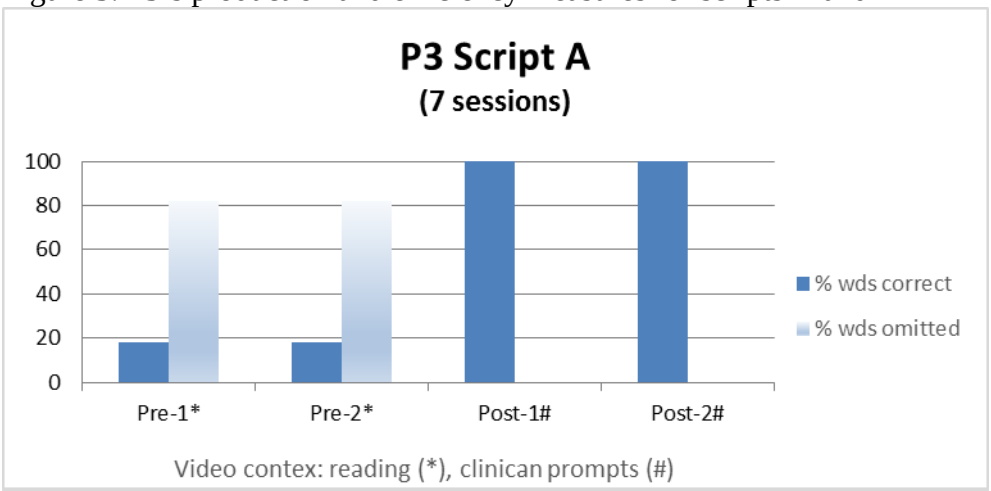
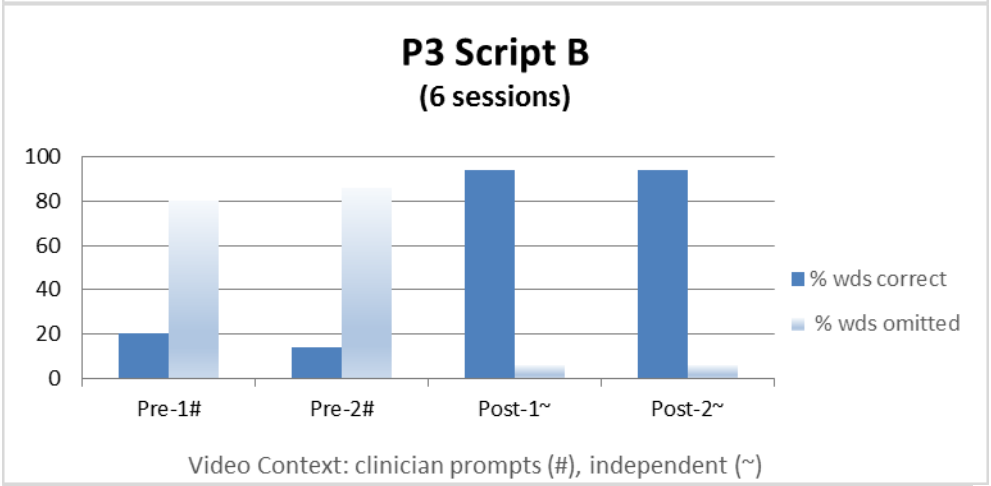


Figure 3. P3's production and efficiency measures for scripts A and B





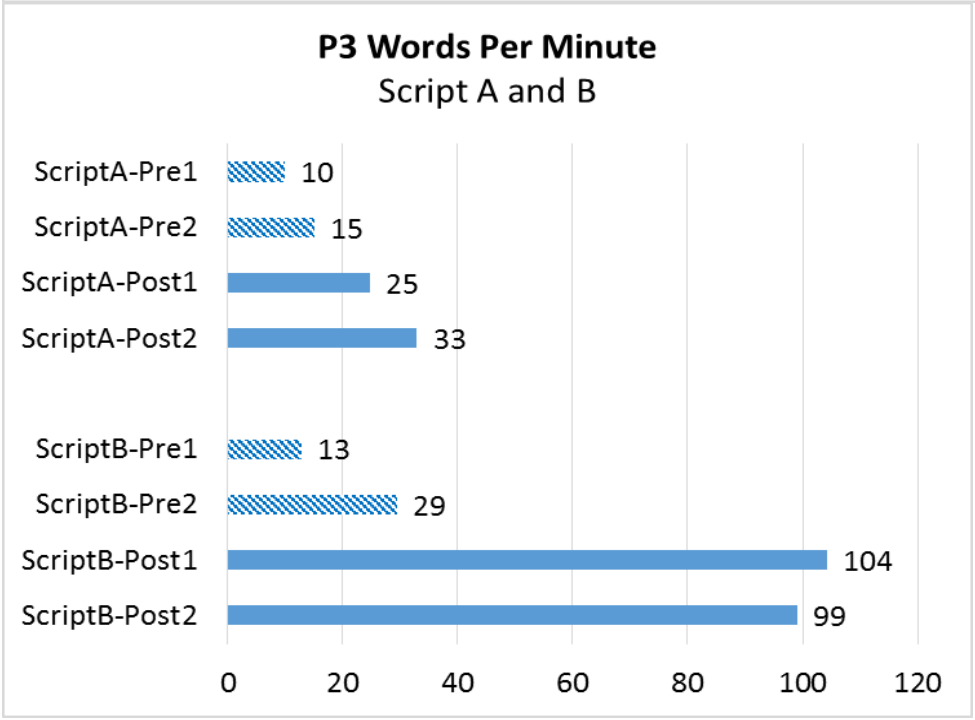


Figure 4. P4's production and efficiency measures for scripts A and B