Introduction

Loss of communication affects stroke survivors in every aspect of their lives. Functional assessments of stroke survivors have revealed that they are less likely to socialize with others, to engage in leisure activities, to take part in household responsibilities, to be independent in transportation, and to continue working (Gresham et al., 1979).

Given the negative consequences associated with aphasia, unsurprisingly, individuals with aphasia report an overall poorer quality of life than individuals without aphasia (Ross & Wertz, 2003). Determinants of reduced quality of life include social isolation and exclusion, changes in communication interactions, changes in work and familial roles, and environmental barriers (Hermann & Wallesch, 1989; King, 1996; LaPointe, 1999; Ross & Wertz). In a 1988 needs survey, researchers of the National Aphasia Association (2005) found that 72% of the surveyed individuals with aphasia were unable to return to work following their stroke. Those who did return to work did not return to their original positions, but were placed in vocational roles with reduced demands. Furthermore, approximately 70% of the surveyed individuals believed that people avoided contact with them because of their communication impairment, whereas 90% reported feeling isolated.

The purpose of this investigation was to determine whether conversational therapy in a group setting could facilitate changes in communication and well-being. The treatment method used was based on script training (Holland & Ramage, 2004; Youmans, Holland, Munoz, & Bourgeois, 2005) and cooperative group treatment (Avent, 1997) and was in keeping with Lyon's (1992) advice: "[Treatment plans] need to accommodate concurrent repairs to both the disability (i.e., effective use of viable communication) and the psychosocial handicap of aphasia" (p. 11).

Methods

Four individuals with chronic aphasia were selected to participant in this treatment study. Each participant was assigned to Treatment Group A or Treatment Group B. Each group received the same type of treatment; no control group was used. Each participant selected three script topics to work on during treatment. Participants received treatment 3 days per week over a 4-week period, for a total of 15 hours of treatment.

In order to determine whether script training in a group setting had an effect on communication and well-being, the researcher gathered data pretreatment and posttreatment using the CADL-2, WAB-R, Cookie Theft picture, subscales of the Burden of Stroke Scale (BOSS), and semistructured interviews. Additionally, changes in trained scripts were evaluated by completing multiple baselines in speaking efficiency across treatment sessions.

Results

Improvements in independent script productions for each baselined script were figured using three measures of speaking efficiency: (1) percentage correct scores, (2) percentage error scores, and (3) correct script words per minute. As shown in Figures 1 through 4 in Appendix A, all participants showed improvement in script accuracy based on percentage correct scores for each topic once training was initiated. Overall, participants showed a mean increase of 55.88% ($SD =$ 21.44) at posttreatment.

Percentage error scores obtained quantified the amount of verbal output given by each participant during each baseline session that was in error or not related to the target script. Results for total percentage error scores across treatment sessions in relation to the accuracy levels obtained are shown in Figures 5 through 8 in Appendix B. An accuracy level of 100% and a percentage error score of zero indicated accurate production of all script words, and an absence of word errors. Analysis of data indicated that, by the end of treatment, percentage error levels decreased for all participants. Overall, participants showed a mean decrease in percentage error scores of 52.26 points ($SD = 20.44$) at Week 1 posttreatment.

The final measure of speaking efficiency involved rate. Each baselined script was timed, and then the number of correct script words produced per minute was calculated. Visual inspection of Figures 9 through12 in Appendix C indicated overall increasing but variable speaking rates for each participant. Overall, participants showed a mean increase of 55.68 in correct script words per minute with a standard deviation of 21.38. Using the Wilcoxon-signed ranks test, the researcher found that change scores for all three measures of speaking efficiency were significant ($p = .01$). Furthermore, improvements made were determined to be the result of treatment and not the result of other external factors. For instance, performance on Scripts 2 and 3 for all participants remained stable until treatment was initiated.

At posttreatment, clinically significant changes were found for 3 participants on the CADL-2 and 2 participants on the WAB-R aphasia quotient. However, minimal to no changes were found on the WAB-R subtests and narrative discourse samples taken using the Cookie Theft picture. Changes in verbal expression as measured by the WAB-R, Cookie Theft picture, and CADL-2 are presented in Tables 1 through 5 in Appendix D.

Finally, to determine if script training in a group setting resulted in improved participants' perceived quality of life, composite scores taken pretreatment and posttreatment on the BOSS and information solicited from semistructured interviews were examined. Change scores on the subscales of the BOSS varied across participants and were not found to be statistically significant (see Table 6, Appendix E). Nonetheless, an overall positive trend was observed on 3 out of the 4 subscales used. This finding coupled with information reported by participants during semistructured interviews suggested that script training in a group setting was beneficial in facilitating changes in communication as well as well-being. During semistructured interviews participants made comments that indicated as a result of treatment, they had experienced increased confidence, increased motivation, increased comfort level, and increased enjoyment

and ease in interacting with others with aphasia. Furthermore, they reported that they had made the following improvements in communication: They found (a) that producing words was easier, (b) that recalling specific words was easier, and (c) that they were better at talking in real-life situations.

Additionally, during the final interview 1 week posttreatment, participants were asked to answer additional questions about treatment using a 7-point rating scale where 1 = *poor* or *not at all* and 7= *significantly* or *excellent*. Questions addressed aspects such as progress made, communication changes outside of therapy, and therapeutic value. For all three topics an average rating of 6 was obtained suggesting that all participants thought that they had made substantial progress in treatment, that treatment had positively affected their communication skills in other situations, and that they believed that the therapeutic value of treatment was high. All participants indicated that they would recommend this type of treatment to other individuals with aphasia.

Conclusion

Findings from the present study support the use of script training in a group setting for individuals with aphasia. All participants were shown to make positive changes in communication and well-being as evidenced by change scores on outcome measures. Furthermore, positive changes were made within 12 treatment sessions. These findings are encouraging given the limited amount of treatment being provided in health care settings, and the increasing demands from third-party payers to document real-life changes as a result of treatment.

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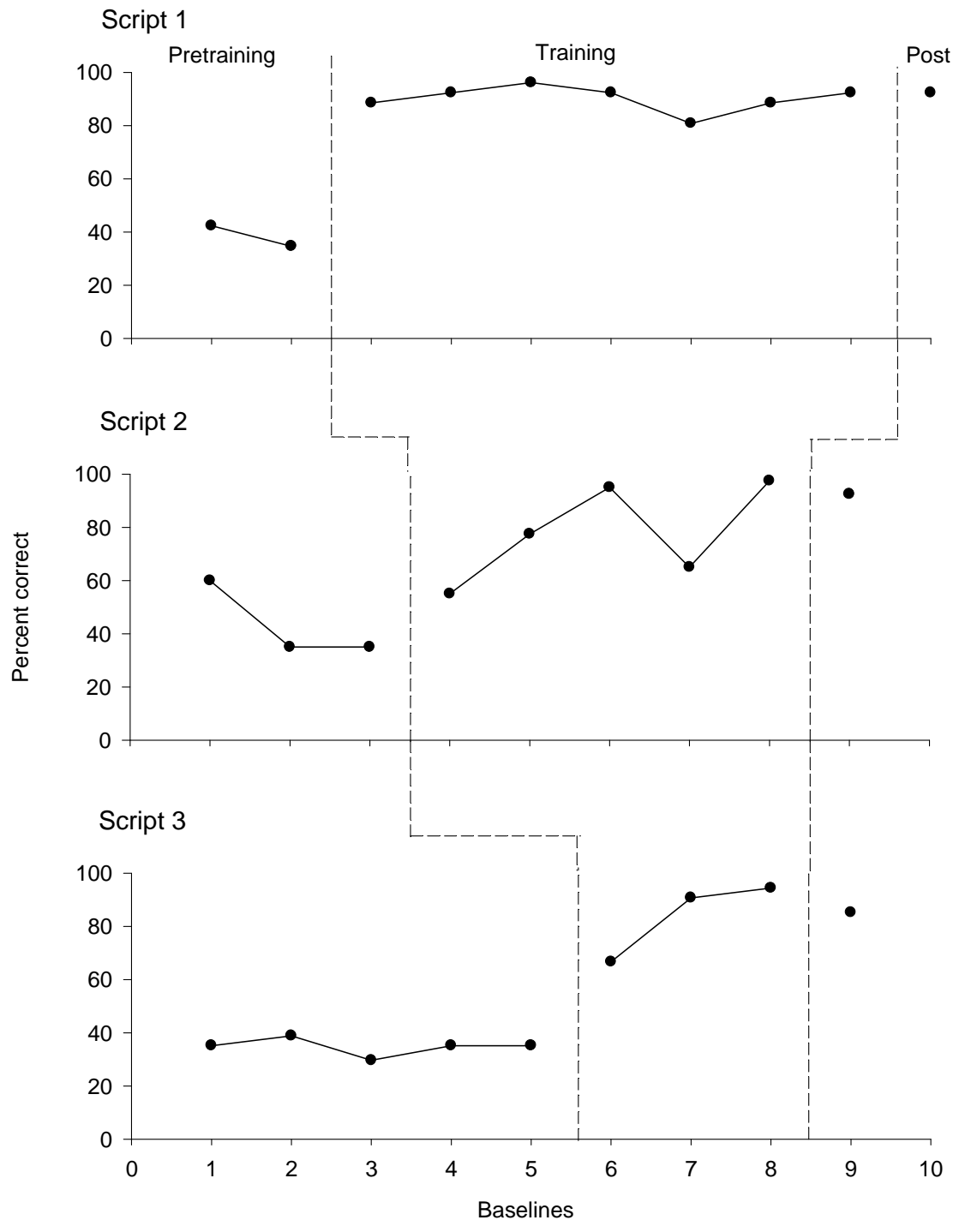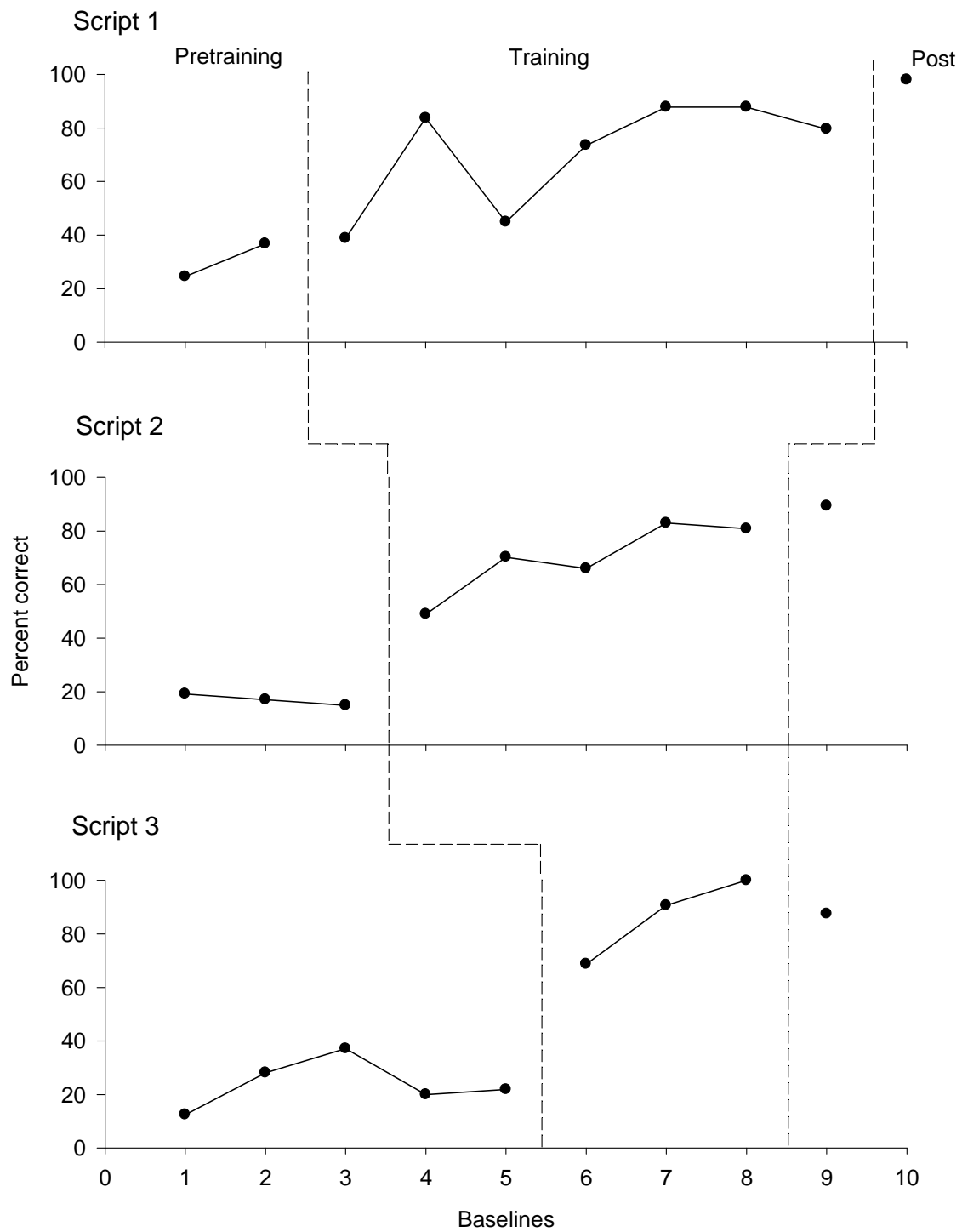
Appendix A

Graphs 1-4
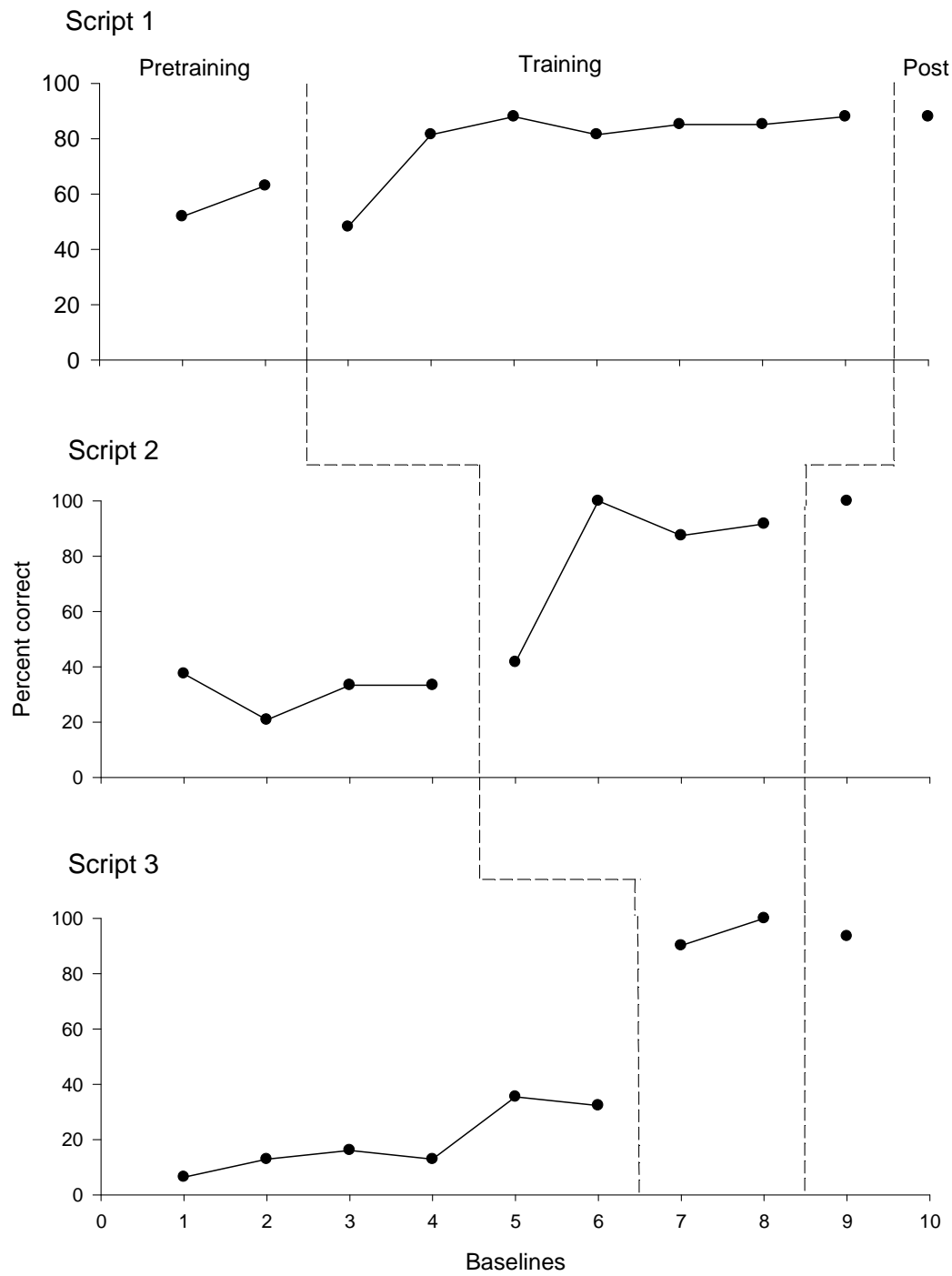
Graph 1. Participant 1's percentage correct scores for each script across pretraining, training, and posttraining baselines.
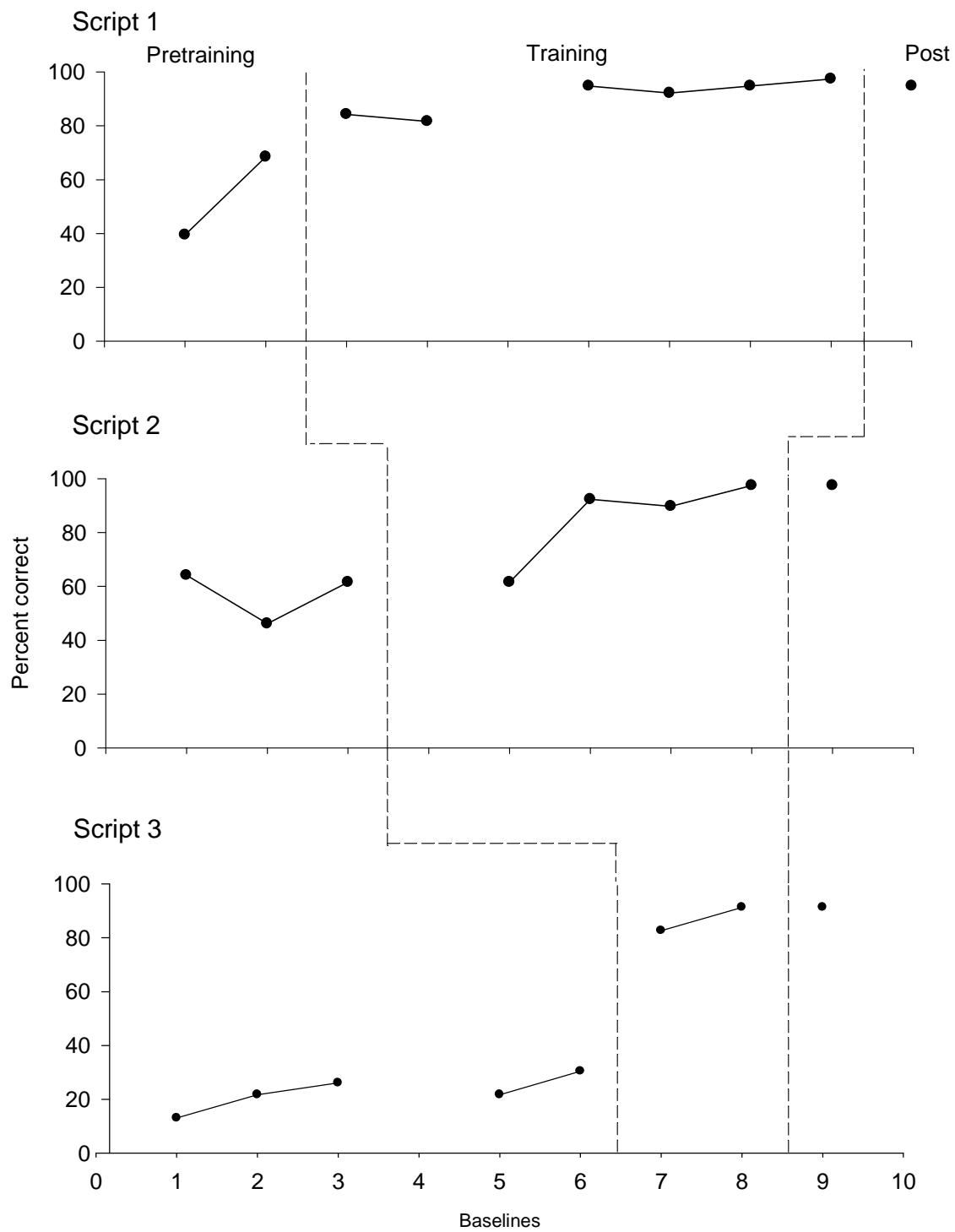
Graph 2. Participant 2's percentage correct scores for each script across pretraining, training, and posttraining baselines.
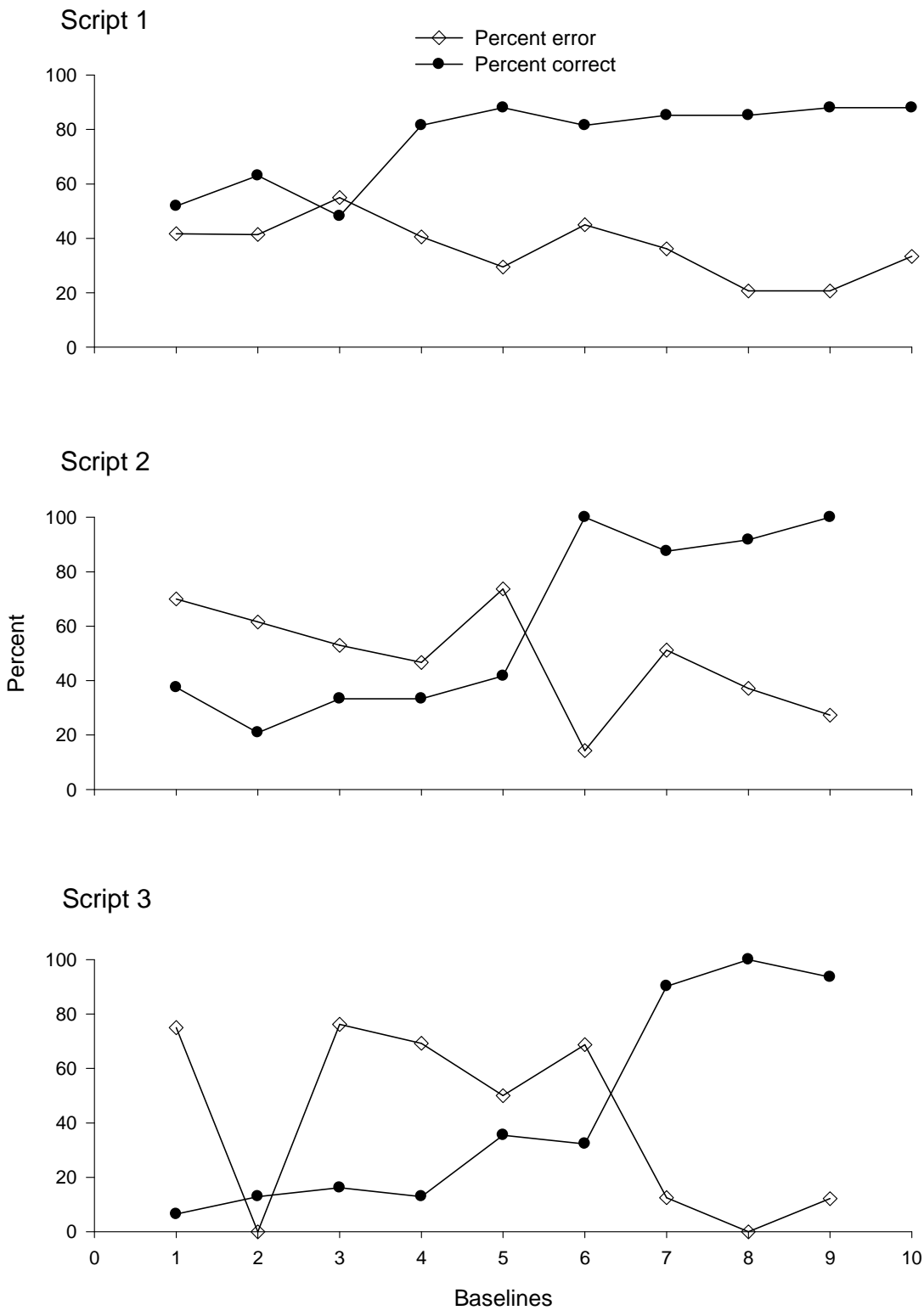
Graph 3. Participant 3's percentage correct scores for each script across pretraining, training, and posttraining baselines.
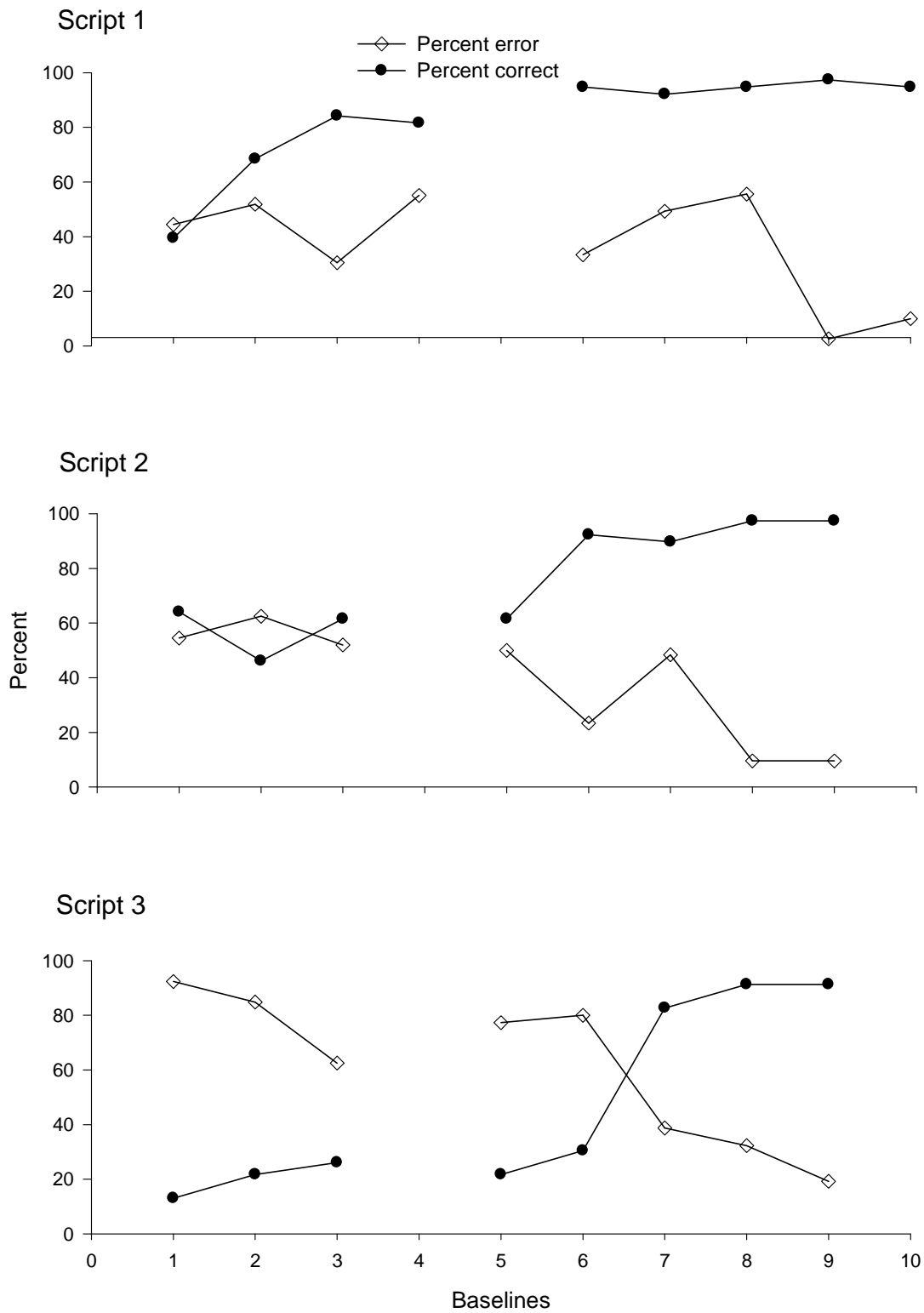
Graph 4. Participant 4's percentage correct scores for each script across pretraining, training, and posttraining baselines.
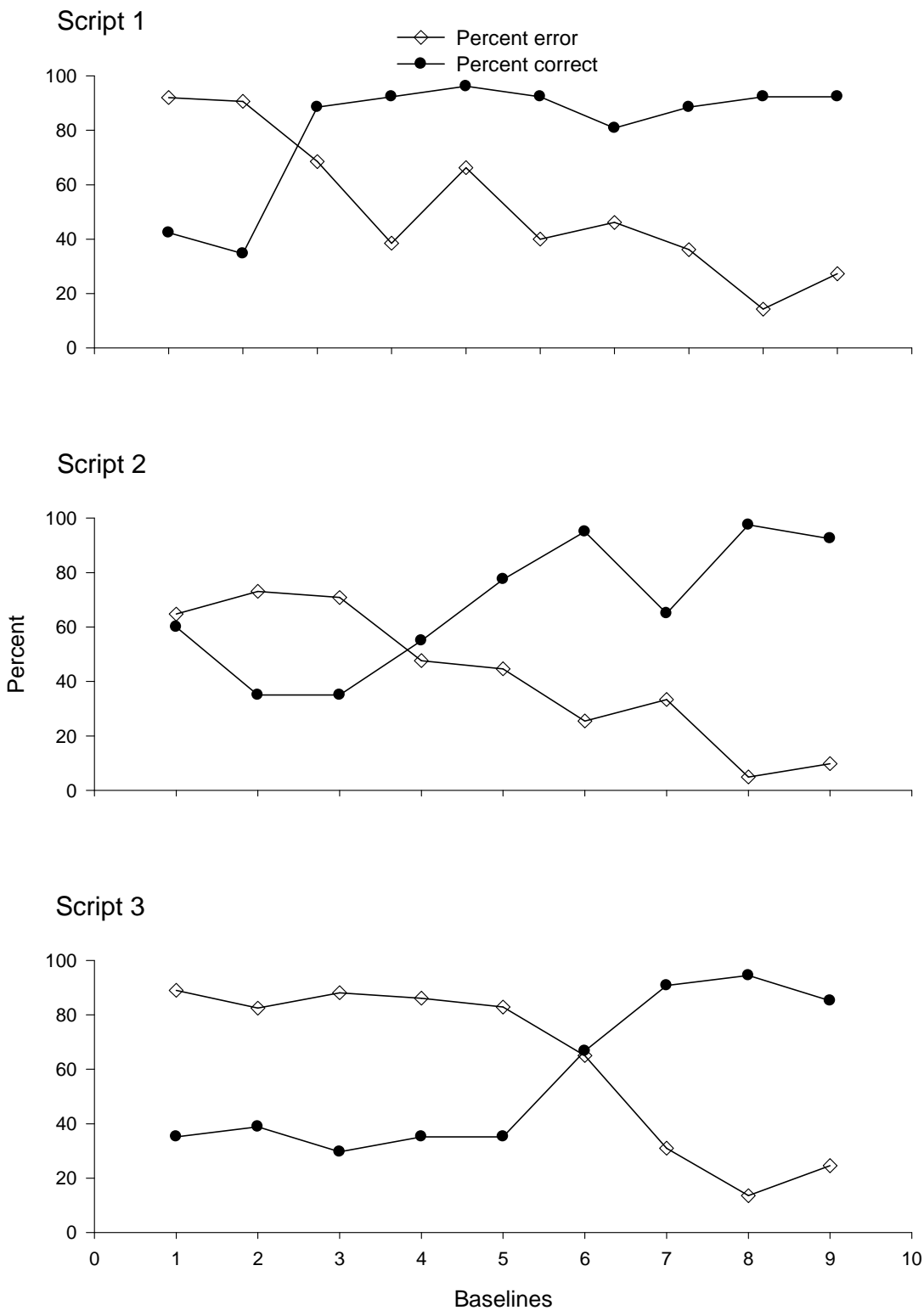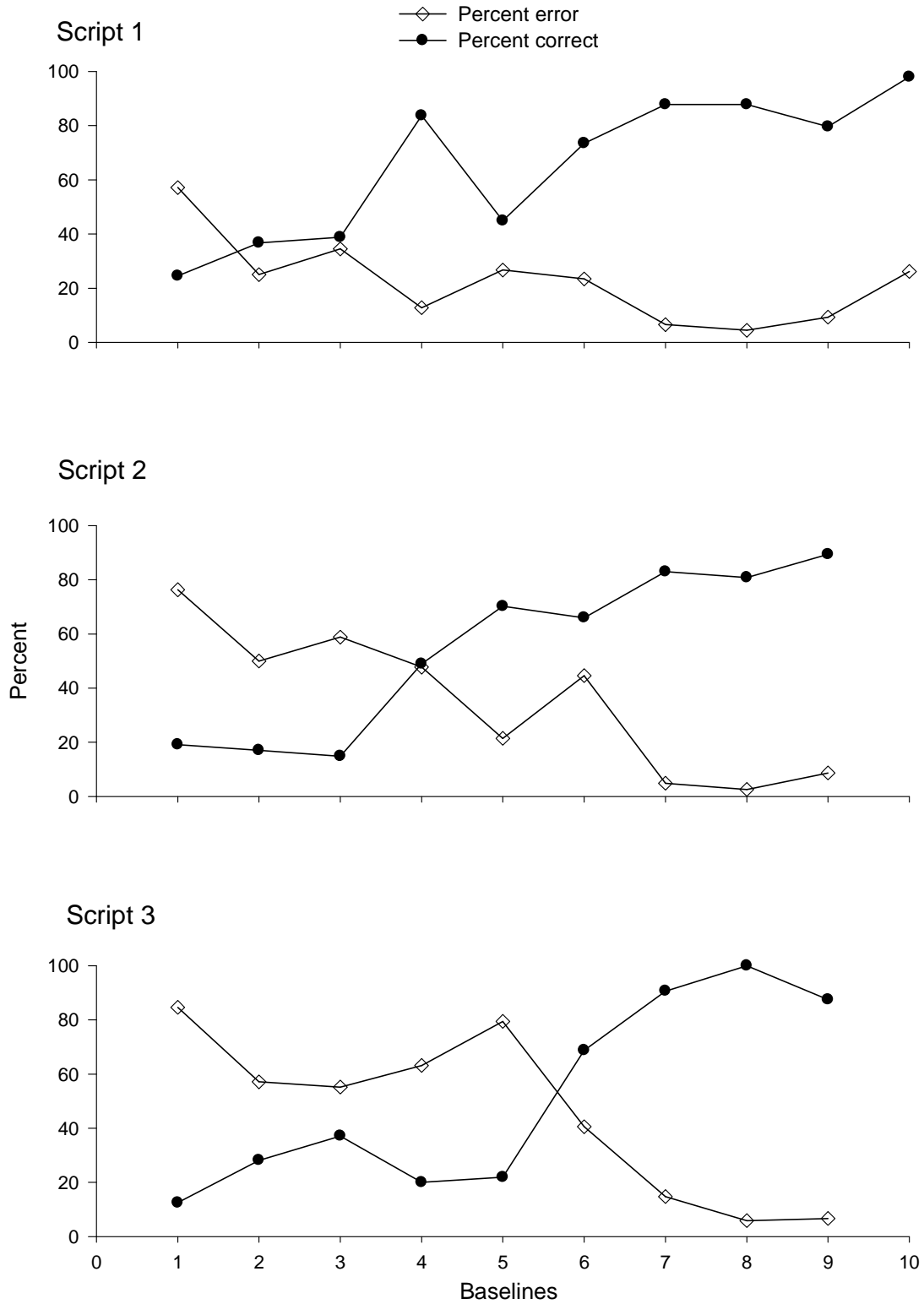
Appendix B

Graphs 5-8

Graph 5. Participant 1's percentage error and percentage correct scores for each script across baselines.

Graph 6. Participant 2's percentage error and percentage correct scores for each script across baselines.
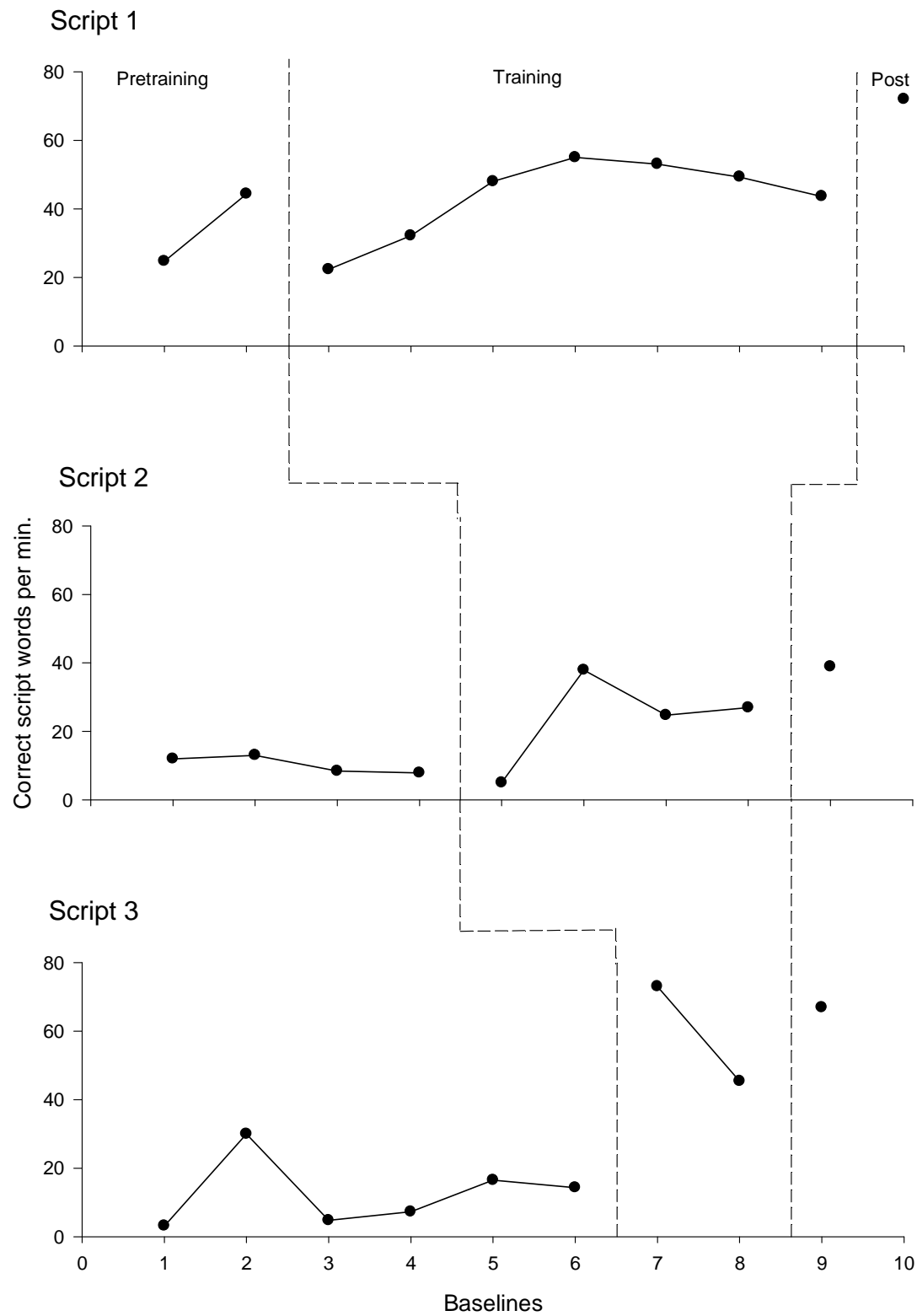
Graph 7. Participant 3's percentage error and percentage correct scores for each script across baselines.

Graph 8. Participant 4's percentage error and percentage correct scores for each script across baselines.

Appendix C

Graph 9-12

Graph 9. Participant 1's correct script words produced per minute for each script across pretraining, training, and posttraining baselines
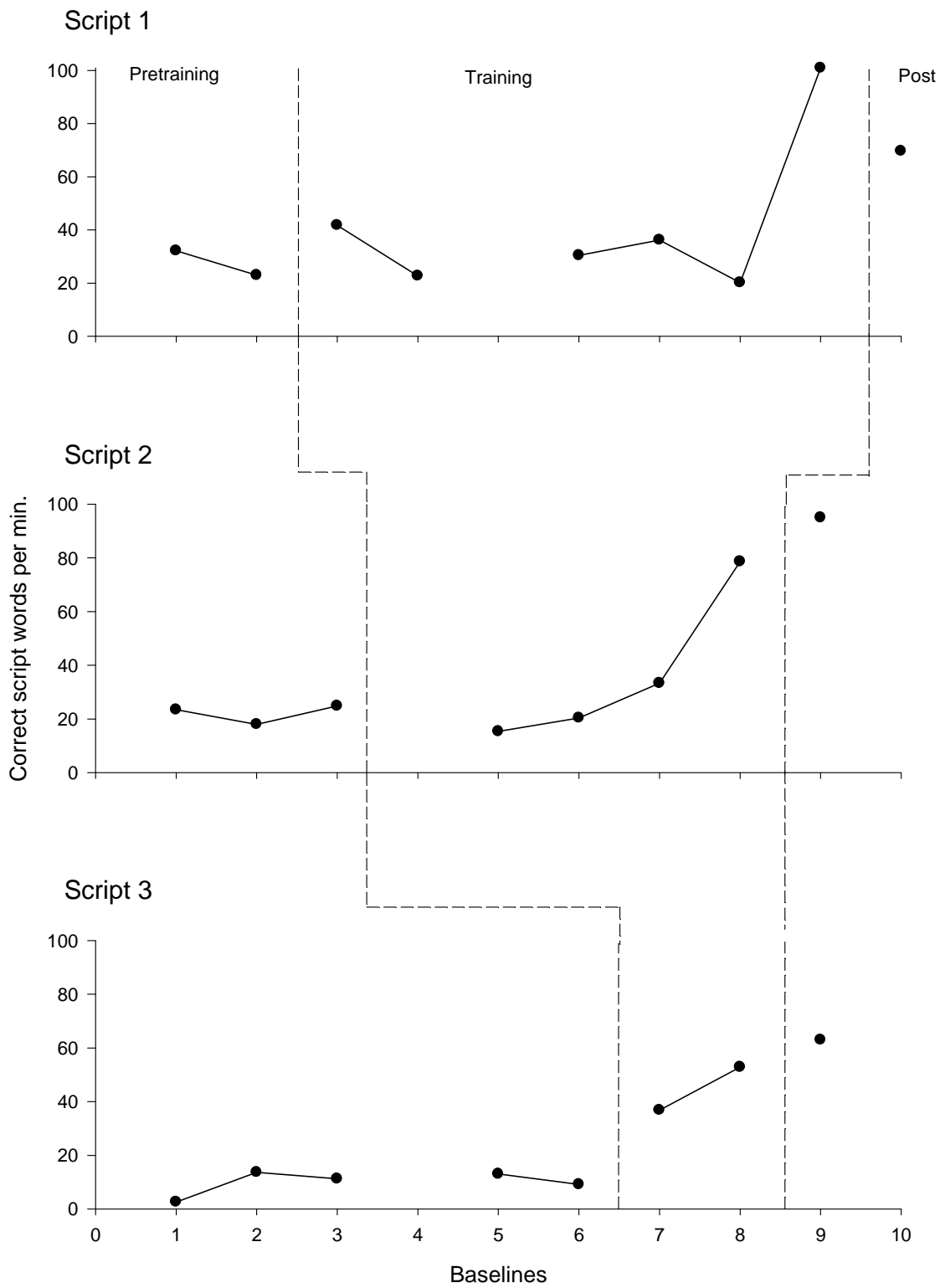
Graph 10. Participant 2's correct script words produced per minute for each script across pretraining, training, and posttraining baselines.

Graph 11. Participant 3's correct script words produced per minute for each script across pretraining, training, and posttraining baselines.

Script 1

Script 2
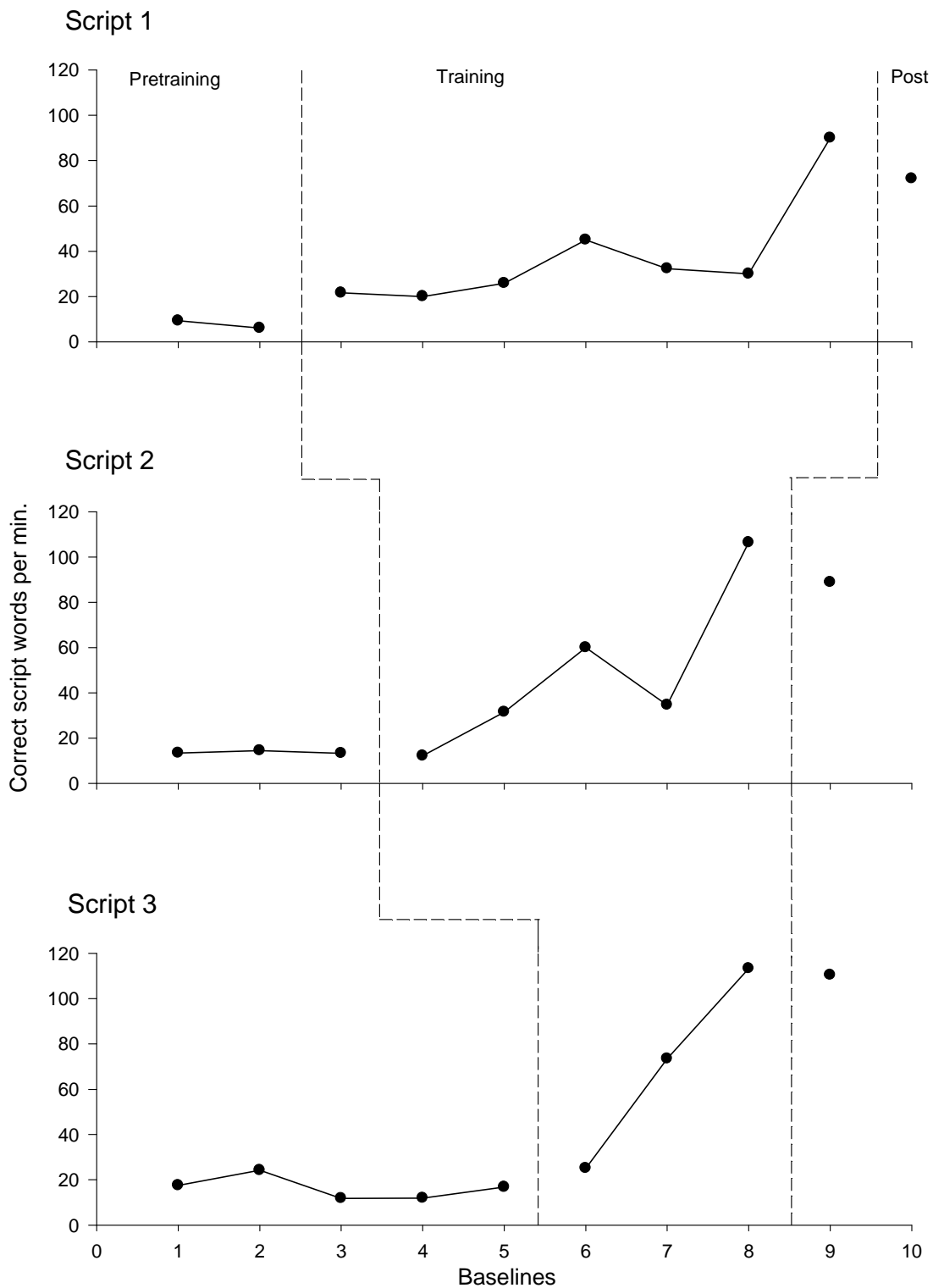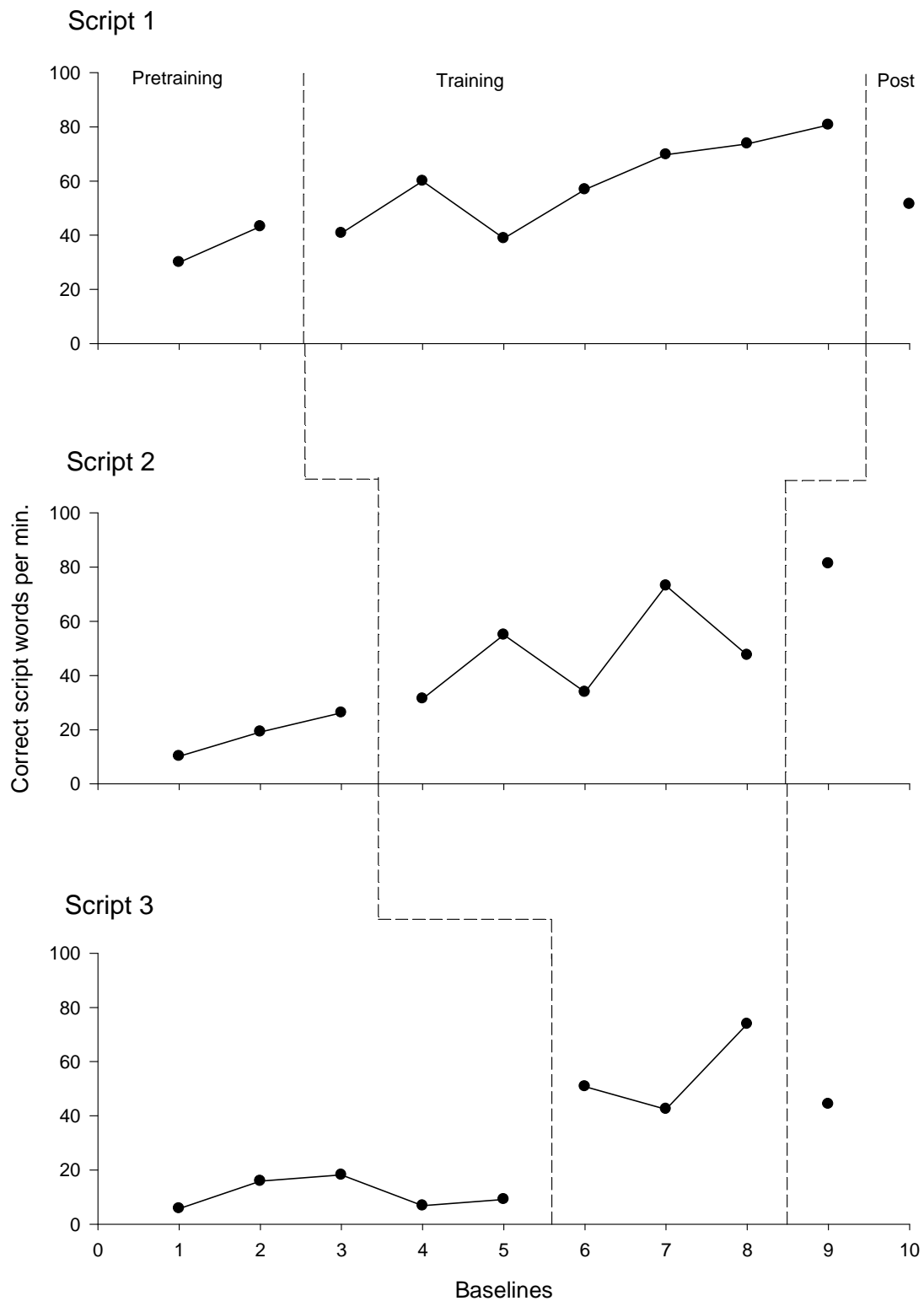
Script 3

Graph 12. Participant 4's correct script words produced per minute for each script across pretraining, training, and posttraining baselines.

Appendix D

Tables 1-5

Table 1

Pretreatment and Posttreatment Verbal Expression Scores on WAB-R

_____

Participant	Pre	Post
1	26.2	24.5
2	19.1	22.2
3	27.4	29.4
4	34.3	35.9

_____

Note. Verbal expression scores = spontaneous speech score, repetition score, and naming and word-finding score combined.

Table 2

Pretreatment and Posttreatment Scores on Individual Language Modalities

_____

Participant	Verbal		Auditory		Reading		Written	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	26.2	24.5	18.5	18.7	19.2	15.8	13.8	12.8
2	19.1	22.2	16.4	17.1	11.0	11.0	9.5	9.6
3	27.4	29.6	15.4	16.5	14.2	15.8	16.5	17.8
4	43.3	35.9	19.4	20.0	18.4	20.0	15.5	13.1

_____

Note. Verbal = verbal expression; auditory = auditory comprehension; reading = reading comprehension; written = written expression.

Table 3

Pretreatment and Posttreatment Scores on Aphasia and Language Quotients

_____

	Aphasia quotient		Language quotient	
Participant	Pre	Post	Pre	Post
1	70.9	67.77	77.7	71.8
2	54.6	61.5	47.8	51.3
3	70.2	75.7	73.5	79.7
4	88.0	91.8	87.6	89.0

_____

Table 4

Pretreatment and Posttreatment Scores on Narrative Discourse Samples

_____

	WPM		CIU %		CIUs PM	
Participant	Pre	Post	Pre	Post	Pre	Post
1	72.22	47.81	12.31	21.57	8.89	10.31
2	64.39	36.00	20.45	17.65	13.17	6.35
3	97.89	157.27	9.68	8.10	9.47	12.72
4	41.14	46.53	37.50	25.64	15.43	12.24

_____

Note. WPM = words per minute; CIU = correct information units; CIUs PM = CIUs per minute.

Table 5

Pretreatment and Posttreatment Scores on CADL-2

_____

	Raw score		Percentile	
Participant	Pre	Post	Pre	Post
1	77	93	54	94
2	82	89	65	86
3	75	80	49	60
4	93	93	94	94

_____

Note. CADL-2 = Communication Activities of Daily Living-Second Edition.

Appendix E

Table 6

Table 6

Pretreatment and Posttreatment Scores on Subscales of Burden of Stroke Scale

_____

	CD		CAPD		PM		NM	
Participant	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1	66.67	58.33	66.67	75.00	21.88	37.50	37.50	25.00
2	47.91	54.16	75.00	83.30	59.38	59.38	65.63	68.75
3	31.25	14.58	50.00	41.66	31.25	--	37.50	6.25
4	54.17	37.50	25.00	41.66	37.5	25.00	50.00	75.00

_____

Note. -- = 0; subscales of Burden of Stroke Scale: CD = Communication Difficulty; CAPD = Communication-Associated Psychological Distress; PM= Positive Mood; NM = Negative Mood; on all subscales, a reduction in value = a more desirable health state.