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Treatment for apraxia of speech: effects of targeting sound groups

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Abstract

A multiple baseline design was used to assess the effects of a treatment programme for sound errors with a speaker with moderately severe apraxia of speech (AOS) and Broca's aphasia. Treatment consisted of training correct production of three groups of sounds (i.e. stops, fricatives, and glides/liquids) in sentences containing multiple exemplars of those sounds. The treatment combined modelling, repetition, integral stimulation, visual cueing, and response-contingent feedback and was applied sequentially to the groups of sounds. Acquisition effects of treatment were measured by evaluating production of trained sentences in probes. Response generalization effects were assessed by examining sound production in untrained sentences containing exemplars of trained sounds and untrained sentences containing untrained sounds. Treatment resulted in improved production for trained sound groups, with response generalization closely following acquisition effects. Generalization across sound groups was negligible. Additionally, measures of sentence duration were conducted for sentences produced in two baseline, one mid-treatment, and two end-of-treatment probes. Statistically significant reductions in duration were noted at the completion of treatment in comparison to baseline measures.

Introduction

Treatment for sound errors that accompany co-occurring apraxia of speech (AOS) and aphasia has often been directed toward improving production of specific sounds (Holtzapple and Marshall 1977, Raymer and Thompson 1991, Rubow *et al.* 1982, Square *et al.* 1986, Wambaugh *et al.* 1996, 1998). Sound melioration treatment approaches have typically focused upon improving the articulatory kinematic aspects of sound production in an effort to alleviate underlying problems with spatial targeting or ability to control range, rate, and timing of articulatory movements. These approaches have included techniques such as modelling/repetition, integral stimulation, articulatory placement cueing, and practice of contrasts and have been shown to have positive effects on sound production (Wertz *et al.* 1984, Wambaugh *et al.* 1998).

In order to examine the effects of sound production treatment on individual sounds, researchers have usually trained sounds sequentially, one at a time (Raymer and Thompson 1991, Wambaugh *et al.* 1998, Wertz *et al.* 1984). The study of

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response generalization effects of treatment (i.e. treatment effects to untrained exemplars of trained sounds as well as to untrained sounds) has necessitated this approach in the past. Currently, findings from investigations of response generalization with speakers with AOS and aphasia have indicated that positive response generalization effects typically do not occur unless targeted sounds are related in terms of (i) manner or place of production (e.g. /ʃ/ and /tʃ/) or (ii) underlying error pattern (e.g. devoicing of stops) (Wambaugh and Cort 1998, Wambaugh *et al.* 1998). Additionally, response generalization to untrained exemplars of trained sounds has usually been positive and often closely followed acquisition effects.

Although training sounds individually can result in improved sound productions for speakers with co-occurring AOS and aphasia, such an approach may not necessarily be the most efficient method for reducing sound errors. Specifically, training individual sounds sequentially is a time-consuming process and training several sounds simultaneously could produce substantial time-savings. Given what is known about response generalization in this area, targeting sound groups that are related by manner of production or error type could result in a reduction of time required to eliminate sound errors.

Therefore, we attempted to extend the generalization literature in the area of treatment for sound production in speakers with AOS and aphasia by examining the response generalization effects of training groups of sounds. Treating numerous sounds simultaneously has been advocated and studied before with apraxic patients by investigators such as Holtzapple and Marshall (1977). However, because of problems with lack of replications and deficiency of demonstration of experimental control, little is known about the effectiveness of this type of treatment, especially in the areas of generalization and maintenance effects.

The selection of the treatment utilized in this investigation was motivated primarily by the speech production behaviours demonstrated by the subject under study. The subject of this investigation was a female speaker with co-occurring AOS and Broca's aphasia. She demonstrated the ability to execute the articulatory parameters necessary for correct productions of all sounds in one- and two-syllable words and phrases. However, she exhibited relatively predictable sound errors, crossing all sound classes, in sentence-level productions as well as in discourse. There are numerous theoretical reasons why the subject produced sound errors when attempting sentence productions. Some of these possible sources of sound errors include

(1) inability to specify necessary articulatory parameters in motorically complex productions,
(2) inability to self-monitor productions adequately in longer utterances,
(3) reduced ability to specify articulatory parameters when sounds in close proximity require similar parameter specification, and
(4) reduced resources for sound production due to increased processing demands required by more complex utterances (i.e. linguistic considerations relative to the aphasic impairment).

The treatment chosen for study incorporated techniques with the potential to impact on all of the preceding possible problem areas and combined modelling, repeated practice, integral stimulation, and response-contingent feedback.

We considered intervening directly at the level of discourse, but felt that controlling occurrences of targeted sounds would be too difficult. Consequently, we opted to focus on multiple sound targets at the sentence level. This approach was somewhat novel in that sentence-level AOS treatments have not typically targeted specific sound production and sound production treatments have not usually been conducted at the sentence level (Square and Martin 1994, Wambaugh and Doyle 1994).

The primary purpose of the current investigation, therefore, was to examine the acquisition and response generalization effects of training correct sound production of three groups of sounds (i.e. stops, fricatives, and glides/liquids) in sentences containing multiple exemplars of those sounds with a speaker with chronic AOS and aphasia.

Additionally, we wanted to collect preliminary data to assist in better understanding of the relationship between treatment for sound production and temporal measures. Temporal aspects of speech production have frequently been identified as being disrupted in apraxic speakers (McNeil *et al.* 1997, Square and Martin 1994). Several approaches have been advanced for treating the underlying temporal and/or prosodic deficits thought to characterize AOS: metronomic pacing (Dworkin *et al.* 1988), contrastive stress drill (Wertz *et al.* 1984), melodic intonation therapy (Sparks and Deck 1986), and the eight-step continuum (Deal and Florance 1978, Rosenbek *et al.* 1973).

The preceding treatments incorporated repeated practice of sentence productions as part of the treatment package. Because repeated practice of sentences was also a part of the treatment utilized in this investigation, we felt that it was possible that temporal changes would occur. We selected total sentence duration as a general measure of potential temporal changes because it incorporates several temporal variables such as inter-word interval durations and segmental durations. Therefore, a secondary purpose of this investigation was to examine sentence durations across the course of the investigation.

Method

Subject

The subject was a 49 year old, native-English speaking female, with moderate apraxia of speech and non-fluent, agrammatic aphasia. She was 61 months post-onset of a left-hemisphere cerebral vascular accident and exhibited right hemiparesis. Her speech was characterized by articulatory groping, some difficulty initiating speech, numerous perceived sound substitutions, occasional sound distortions, and a perceptually slow rate of speech. Sound errors in monosyllabic and bisyllabic words tended to be consistent and non-variable, in manner, place, and voicing, across repetitions. In addition, she exhibited frequent subvocalic self-rehearsals. Overall, her speech was consistent with the behaviours described by McNeil *et al.* (1997) as exemplifying apraxia of speech. Motor speech examination revealed no significant abnormalities in muscle tone or strength or any classifiable dysarthrias as discussed by Darley *et al.* (1975). Pre-treatment assessment findings are shown in table 1.

Although this speaker presented with both aphasia and AOS, her speech productions typified AOS (as indicated above). These behaviours were congruent with McNeil *et al.*'s (1997) definition of AOS as a motor speech disorder (i.e. not a phonological disorder) in which sound errors occur because of problems in

Table 1. Pre-treatment measures

Measure	Score/rating
Porch Index of Communicative Abilities (Porch 1981)	
Overall score	13·04
Western Aphasia Battery (Kertesz 1982)	
Aphasia quotient	75·5
Aphasia type	Broca's
Apraxia Battery for Adults (Dabul 1979)	
Severity rating	Mild–moderate
Test of Adult/Adolescent Word Finding (German 1990)	
Raw score	32
Mean length of utterance	
Conversational discourse	4·31
Assessment of Intelligibility of Dysarthric Speech (Yorkston and Beukelman 1981)	
Word	66%
Sentence	59%

translating an accurately filled phonologic frame to kinematic parameters necessary for executing speech movements. Of course the subject's aphasic impairment may have adversely affected her speech behaviour, particularly in sentence productions, as was suggested earlier. Unfortunately, we cannot specify the separate effects of this subject's AOS and aphasia on her speech. Given the fact that AOS frequently occurs with Broca's aphasia, it is necessary to study the effects of treatment on sound production in subjects who present with both disorders.

Prior to participating in the current investigation, the subject received treatment for production of /ʃ, z/ and /θ/ at the word and phrase level. Treatment consisted of a combination of modelling/repetition, minimal contrast (i.e. target sounds contrasted with replacing sounds), integral stimulation, and articulatory placement cues. Sequential modification of treatment (Stokes and Baer 1977) was used as a strategy to promote stimulus generalization in that treatment was applied sequentially to monosyllabic words, multisyllabic words, and words in phrases. Upon completion of the preceding training, the subject continued to exhibit relatively consistent sound errors in sentences as well as in discourse.

Experimental stimuli

Seventy sentences were used for measuring treatment effects. The sentences represented the following three sound groups, with 20 sentences per group: (i) fricatives, (ii) stops, and (iii) glides and liquids. An additional group of 10 sentences containing a mixture of consonants was included (see Appendix).

The sentences within each sound group contained predominantly the type of sounds representative of that group, with sounds from the other groups being avoided as much as possible. Sentences were controlled for sentence word length, sentence syllable length, word syllable length, number of targets per sentence, and grammatical complexity.

Ten sentences from each sound group of 20 sentences were selected for training and the remaining 10 of each were used for probing response generalization. The mixed sentences were never trained.

Experimental design

A multiple baseline design across behaviours was employed. Correct productions of the three types of sounds served as the behaviours of interest.

Baseline

During the baseline phase, correct production of targeted sounds during sentence repetition was measured for all sound groups. Sentences were presented in blocks by sound type, with the order of the blocks randomized and the 20 items within each block randomized. The examiner read each sentence and asked the subject to repeat it as accurately as possible. Target sounds within each sentence were transcribed using broad phonetic transcription and were verified using audio recordings of the probes. Based upon the transcriptions, each target was scored as correct or incorrect and the percentage of correct sound productions was calculated for each sound group. Three baseline probes were conducted, with all behaviours remaining stable, or decreasing in accuracy, prior to the application of treatment.

Probes

During the treatment phase, probes identical to those in baseline were conducted preceding every treatment session for the sound group receiving treatment. For the sound groups not receiving treatment, probes were conducted every 3rd to 5th treatment session. Target sounds were transcribed as described above and the percentage of correct sound productions was calculated for each sound group for every probe.

Treatment

Treatment was applied sequentially to only one sound group at a time; first to stops, then to fricatives, and finally to glides/liquids. The order in which sounds were entered into treatment was determined by several factors. As indicated previously, this subject had received treatment for the fricatives /ʃ, z/, and /θ/ prior to this investigation. Therefore, in order to minimize recency effects of that training, as well as to evaluate the maintenance effects of the previous treatment, we did not want to begin with treatment of fricatives. Additionally, although stops and glides/liquids were produced correctly at similar accuracy levels, glide/liquid productions appeared to be less stable in baseline measurements. Therefore, stops were designated to receive treatment first. Because fricatives appeared to be slightly more stable than glides/liquids, they were selected as the second group to receive treatment.

The treatment combined modelling/repetition, integral stimulation (i.e. 'watch me, listen to me, say it with me'), visual cueing using graphemes, and response-contingent feedback in an effort to promote correct production of specific sounds within the context of sentences.

The 10 treatment sentences were randomized and the following treatment hierarchy was utilized:

(1) The subject was shown a printed copy of the sentence. The examiner modelled a relatively slow production of the entire sentence and instructed the subject to repeat the sentence.

(a) If all target sounds were correct, positive feedback was provided and subject was required to repeat the entire sentence with integral stimulation.
(b) If any target sounds were incorrect, feedback was provided, the word(s) containing the target was modelled, and the subject repeated the word only.
  (i) If sounds were correct, positive feedback was given and the subject was required to repeat the entire sentence with integral stimulation.
  (ii) If sounds were still incorrect, feedback was provided and the word with the target was attempted with integral stimulation, up to a maximum of three attempts. Upon a correct production, the entire sentence was produced with integral stimulation.

(2) When all words in the sentence were not attempted, feedback was provided, the examiner modelled the sentence again while pointing to each word, and the subject was required to produce the sentence while the examiner pointed to each word. The preceding steps were then followed.
(3) Following a correct production or a failure after completing all steps, the next item was presented. After all 10 sentences were attempted, they were presented again in a different random order.

In all of the preceding steps, feedback took the form of verbal presentation of 'knowledge of results' as described by Schmidt (1988). That is, the clinician indicated verbally whether the production was correct or incorrect and specified which word was incorrect or missing.

Treatment was administered by the second author three times per week. Sessions lasted approximately 1 h (including probes) and at least four trials of each of the 10 training sentences were completed per session. Treatment continued until the subject demonstrated correct production of 90% of treated items in three of four consecutive probe sessions.

Maintenance and follow-up

Maintenance of acquired behaviours was measured during training of subsequent sound groups. Specifically, maintenance of correct stop production was measured during training of fricatives and training of glides/liquids. Similarly, maintenance of correct fricative production was measured during training of glides/liquids. Production of all sound groups was measured at 6 weeks following cessation of all treatment.

Durational analysis

For the durational analysis, the sentences produced in probe sessions were used to determine length of utterance. These measures were made on sentences from two baseline sessions, the last two probe sessions, and a probe corresponding to the end of training of the first sound group. All probes were audio recorded using a Sony TC-D5M cassette recorder and Sony ECM-155 lapel microphone. The analogue recordings were digitized at a sampling rate of 20kHz and stored using the Computerized Speech Lab (CSL; Kay Elemetrics). Oscillographic and spectrographic displays were produced and linked to determine sentence durations. Total sentence duration was calculated from the onset of the first sound produced to the offset of the last sound produced using the linked displays.

Reliability

Sound production

Twenty-five per cent of all baseline and probe sessions were randomly selected for re-scoring by a second listener. Point-to-point agreement for judgements of correctness of production of target sounds was determined for each probe by calculating the number of agreements between the original scorer and the second listener and dividing by the total number of sounds scored. Percentage of agreement for each of the sound groups was as follows: (i) stops, 92%; (ii) fricatives, 94%; (iii) glides/liquids, 93%; and (iv) mixed, 91%.

Sound durations

Twenty-five per cent of the sentences utilized in the calculation of sentence duration were randomly selected for re-measurement of duration by a second individual. Ninety per cent of the re-measurements fell within 10 ms of the original measurement of overall duration.

Results

Probe data, representing percentage correct production of target sounds in sentences, are shown in figure 1 for all phases of the investigation. Data for each sound group are depicted on separate graphs, with squares representing trained items and circles represented response generalization items (i.e. sounds in sentences that were never trained). The graphs are ordered from top to bottom according to the sequence in which treatment was administered.

As seen in figure 1, correct responses remained stable or declined throughout all baselines. Specifically, correct baseline productions (i.e. productions obtained prior to introduction of treatment for a particular sound group) ranged as follows: (i) stops, 51% to 62% for trained items and 57% to 62% for untrained items; (ii) fricatives, 51% to 62% for trained items and 51% to 65% for untrained items; and (iii) glides/liquids, 48% to 74% for trained items and 47% to 70% for untrained items. Mixed consonants were never trained and ranged from 36% to 83% correct.

For all trained sound groups, correct productions in trained items increased relatively rapidly following application of treatment. Correct productions in untrained items (i.e. response generalization items) also increased above baseline levels and closely followed increases in acquisition items. Correct production of stops increased to as high as 97% correct for trained sentences and 84% correct for untrained sentences. For fricatives, correct productions rose to 96% for trained items and 86% for untrained items. Correct fricative production reached 97% for trained items and 89% for untrained items.

Maintenance effects were strong for stops and fricatives in that trained behaviours remained close to 100% correct and untrained behaviours remained between 78% and 90% correct for both groups. Similarly, follow-up probes at 6 weeks post-treatment revealed that the subject had maintained high levels of correct responding for all sound groups.

Generalization across sounds groups was negligible, in that correct responses in untrained groups never rose above baseline levels (until treatment was applied).

Results of durational analyses are presented in table 2. The data in table 2

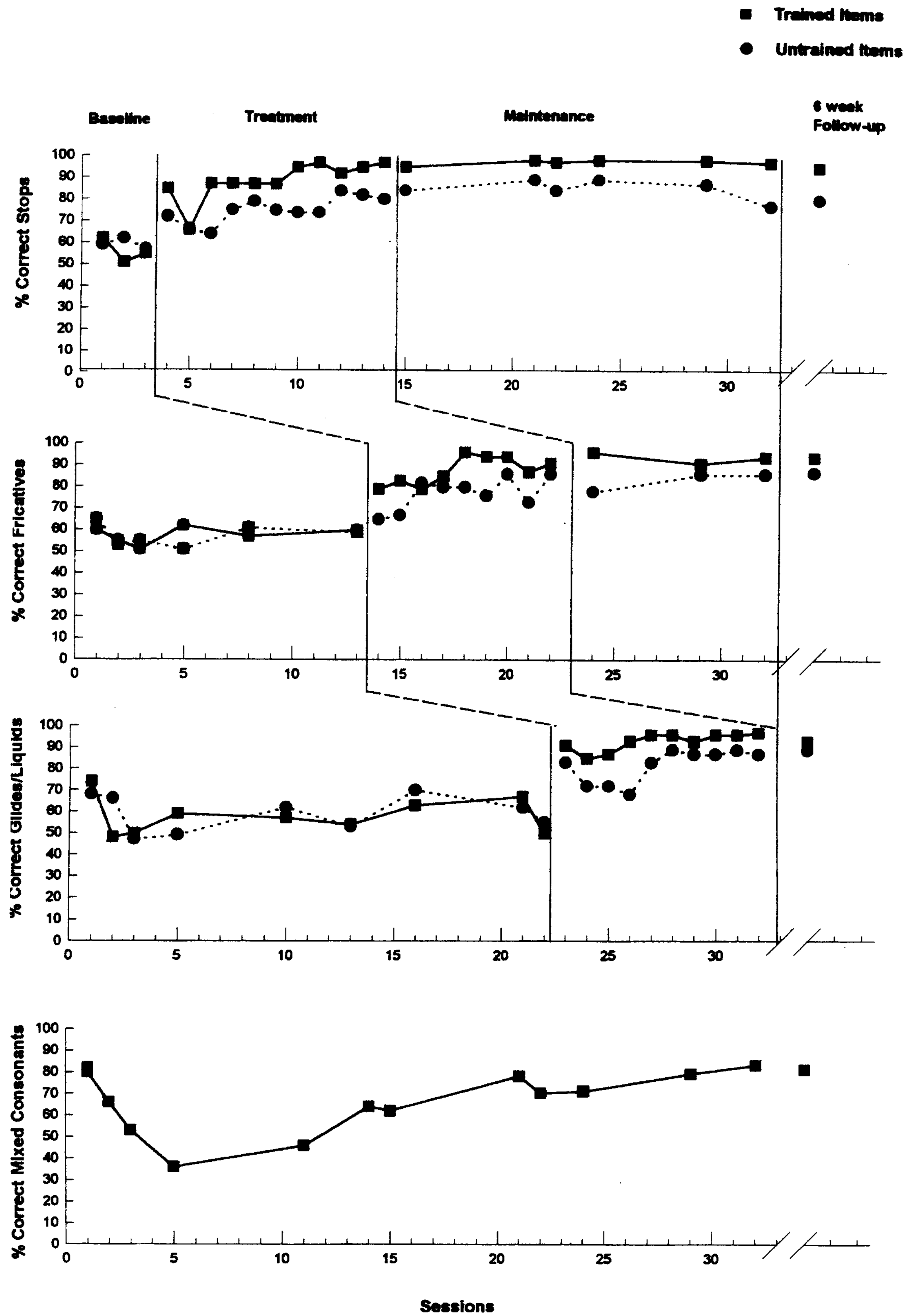

Figure 1. Percentage correct target sounds in sentences in probes: acquisition, response generalization, and maintenance.

Table 2. Mean sentence durations and standard deviations (ms)

Sound type	Baseline 1	Baseline 3	Mid-treatment probe	Next to last probe	Last probe
Stops					
Treatment	1120 (450)	928 (596)	364 (143)	334 (152)	338 (149)
Non-treatment	912 (393)	795 (428)	455 (184)	412 (190)	388 (177)
Fricatives					
Treatment	677 (589)	546 (344)	576 (401)	311 (108)	309 (126)
Non-treatment	719 (678)	828 (525)	469 (281)	296 (89)	337 (128)
Glides/liquids					
Treatment	877 (573)	731 (493)	942 (420)	315 (150)	429 (227)
Non-treatment	835 (346)	658 (384)	821 (439)	321 (76)	299 (118)
Mixed	757 (262)	1249 (671)	576 (276)	474 (246)	566 (488)

Table 3. Chi-squared and p values for repeated measures analyses of variance on ranks: comparisons across sampling times

Sound group	Treated sentences	Untreated sentences
Stops	25·1 ($p = 0.00005$)	16·4 ($p = 0.0025$)
Fricatives	19·1 ($p = 0.0008$)	19·2 ($p = 0.0007$)
Glides/liquids	20·9 ($p = 0.0003$)	19·2 ($p = 0.0007$)
Mixed	NA	14·7 ($p = 0.0054$)

represent mean durations for trained and untrained sentences by sound group, with standard deviations presented in parentheses. Friedman repeated measures analyses of variance on ranks were conducted for each group of sentences in order to determine if there were statistically significant differences across the five sampling times. Significant differences at $p < 0.01$ were found for all sentence groups (see table 3). Student–Newman–Keuls follow-up tests revealed that values from each baseline sample were significantly greater than values from both the last and next-to-last samples for stops, fricatives, and glides/liquids. However, for the mixed sentences, only the durations from baseline 3 were significantly different from the last and next-to-last durations (i.e. baseline 1 values did not differ significantly). Additionally, values from baseline 3 were significantly different from those from baseline 1 in the following cases: stop sentences (treated), liquid/glide sentences (treated), and mixed sentences.

Discussion

These findings illustrate that treatment did effect positive changes in sound production at a sentence repetition level and that training a limited number of sentence exemplars resulted in generalization to untrained sentences containing those same types of sounds. These results are similar to previous findings with training of individual sounds (Wambaugh *et al.* 1996, 1998). Additionally, the lack of generalization across sound groups in this investigation was similar to effects of single sound training.

The decision to focus treatment upon numerous sounds at once appeared to be an efficient approach for this subject. However, this subject was quite stimulable for correct production of all sounds, so that a minimal number of steps were required when incorrect productions occurred. Additional steps in this treatment hierarchy would probably be required for apraxic and aphasic speakers who are not so stimulable and focusing upon numerous sounds could be counter-productive in such cases. Also, as mentioned earlier, this subject had received training on individual sounds prior to this study, so that this treatment could perhaps be considered an extension of individual sound training, particularly for the fricative sounds. However, this subject had not received treatment previously for stops or glides/liquids, so that the effects of this particular treatment can be evaluated more clearly for these sounds.

In considering the proposed sources of this subject's sound errors in relation to various aspects of the treatment, there are several possible explanations for the positive results of this treatment. The response-contingent feedback and repeated practice, both with and without integral stimulation, obviously should have promoted increased motor skill in executing articulatory parameters in motorically complex productions. This theorized increased skill appears to have been restricted to trained sounds, as evidenced by the lack of response generalization across sound classes. The use of response-contingent feedback and graphemic cueing may have facilitated discriminative responding among members of the sound class and probably also helped to increase self-monitoring skills. Additionally, repeated exposure to various linguistic elements may have diminished the possible negative impact of the subject's aphasic impairment on sentence production.

Although response generalization effects to untrained exemplars of trained sentences were positive and closely followed acquisition effects, levels of correct production for untrained sentences were consistently lower than for trained sentences. Additionally, response generalization effects to mixed consonant sentences were negligible. Perhaps insufficient exemplars were trained and training additional exemplars may have resulted in increased response generalization. Possibly additional over-learning was required and the criterion of 90% correct in probes was not stringent enough to promote complete response generalization. The lack of generalization to mixed consonant sentences was not particularly surprising. These sentences included sounds that were never trained (e.g. /tʃ, dʒ/) and relatively few occurrences of each of the trained sound classes. Therefore, the lack of generalization to these sentences is congruent with the lack of generalization across sound classes. An issue related to the mixed consonant sentences that was unexpected was the substantial decrease in correct productions that occurred across the first four baseline probes. Some decreases were also observed in the other sound classes, but not to the degree seen with the mixed consonant sentences. We can offer no real explanations for this behaviour. Conceivably, as the novelty of the probe sentences decreased, so did the effort expended by the subject and the mixed consonant sentences may have required more effort in production. However, even though correct productions never rose above the level of the first probe, productions certainly stabilized throughout the course of treatment.

As with most investigations of AOS treatment, we failed to report on stimulus generalization effects of treatment. That is, use of trained productions in additional stimulus contexts was not examined. However, the impetus for this investigation did stem from our interest in stimulus generalization in that we had systematically measured such effects in our previous work with this subject and had observed a lack of stimulus generalization to the sentence level. Therefore, with this study, we were programming for generalization specifically at the level to which it had not occurred with prior training. Additionally, we collected personal recount discourse samples throughout the course of this investigation and are currently analysing those samples to determine whether there were stimulus generalization effects at the level of discourse.

The durational analysis was included in this investigation as an initial attempt to study the relationship between temporal variables and sound production treatment. Sentence durations decreased significantly from baseline sessions to final sessions for trained as well as untrained sentences. Given the observations that some statistically significant durational changes were observed prior to the introduction of treatment and that untrained sentence durations changed, it is likely that durational changes were due to practice effects. That is, the probing procedure, which entailed repeated productions of sentences, may have provided sufficient practice in sentence production to promote improved durations for these sentences. Of course, treatment also involved repeated practice of sentences which may have resulted in a general improvement in motor skills required to produce sequences of words. Additionally, improved facility with sound production may have contributed to reduced durations. The durational data for fricatives and glides/liquids indicate that treatment may have facilitated durational changes. That is, durations for these two groups did not change significantly following treatment for stops (i.e. mid-treatment probe), but did change after these sound groups received treatment. However, the mixed consonant group changed significantly in duration following stop treatment. In hindsight, it is apparent that inclusion of a group of sentences that was not repeatedly exposed to the subject (i.e. pre- and post-tested only) could have helped to identify the source of the observed durational changes. Analysis of additional probe data (e.g. beginning, mid-point, and end of treatment for each sound group) may clarify the role played by treatment in durational changes.

Furthermore, we do not know what aspects of sentence duration accounted for the changes in overall sentence duration. That is, there are a number of temporal variables (e.g. inter-word intervals, vowel durations, consonantal segment durations) that may have changed and resulted in reduced sentence duration. Perceptually, inter-word interval durations seemed to have decreased. Of course, this observation is merely speculative and awaits objective verification. Further study in this area is obviously warranted.

This investigation represents a preliminary attempt to examine the effectiveness of a sentence-level sound production treatment for speakers with apraxic sound errors. Direct and systematic replications of this investigation are needed to establish the efficacy of this approach to treatment for AOS.

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Appendix

Fricative sentences	Stop sentences	Glide and liquid sentences	Mixed consonant sentences
Susan is shy.	Pat buys a big bike.	You yawn loudly.	Sue eats cheese for lunch.
She finds fuzz.	Ted keeps bad dogs.	Red hair is rare.	We give Cindy a lift.
Soda is fizzy.	Deb makes pumpkin pie.	Lynn wears red wool.	Jane is your good friend.
The zoo is fun.	Bobby's key is gold.	Rain ruins her wig.	Very few people see Jim.
My shoes seem stiff.	Cook bakes a cake.	We long for love.	You choose the first one.
Sue fills the vase.	Dotty picks a cat.	Ron relaxes a while.	Toast is good for lunch.
Something falls off.	The puppy eats bugs.	Young lions roar.	I sometimes go with John.
The shell is thin.	The boat docks today.	We hear yelling.	This book is very funny.
Cindy is special.	Dad packs the bag.	Lee learns a language.	Chew your food carefully.
The view is fine.	Todd is a good boy.	Ryan looks lonely.	Charlie never sees that show.
Things seem safe.	The box is cardboard.	Wally wears a rose.	
She knows math facts.	Bob gets a donut.	You like yellow.	
She saves things.	Tim does a good deed.	Leap year is longer.	
She sees seven men.	It's a pretty coat.	Your hair is lovely.	
The sun shines.	My kite gets caught.	Wrens rarely warble.	
He shaves his face.	It gets badly burnt.	Your lunch is warm.	
Salve softens the skin.	Ted breaks the bat.	Worms wiggle away.	
I see five signs.	Gabby paints ten pots.	Wheels roll along.	
Sam says thanks.	Kurt's boot looks muddy.	Lilly lives alone.	
His fees seem high.	Baby goes to bed.	Willy is always late.	