

Voluntary Control of Involuntary Utterances:
A Treatment Approach for Severe Aphasia

Nancy A. Helm and Barbara Barresi
Veterans Administration Medical Center, Boston, Massachusetts

Among the population of adult aphasic patients evaluated for treatment in our clinic was a group with moderately intact auditory comprehension and severely nonfluent verbal output which proved resistant to the most robust treatment approaches. They did not respond to organized treatment programs such as the eight step continuum for apraxia of speech (Rosenbek, et al., 1973) or melodic intonation therapy (Sparks, Helm, Albert, 1974; Sparks and Holland, 1976). While not mute, these patients had virtually no verbal skills beyond a persistent single word stereotype such as "no," "oh" or "baby" or overlearned phrases such as "I don't know." We were unwilling to accept their lack of response to established programs as indicative of patient failure, so we undertook a different treatment approach. This approach differs from others in that the patients' spontaneous utterances form the basis for the therapy; and the patient, not the clinician, determines the treatment lexicon. Because this method involves helping patients to bring involuntarily produced utterances under voluntary control, we call the approach Voluntary Control of Involuntary Utterances or V.C.I.U..

METHOD

Subjects. Three male aphasic patients were treated exclusively with V.C.I.U. for defined periods of time. This allowed comparisons of pre and post therapy standardized test scores to measure the effects of treatment.

Patient L.T. was a 59 year old, converted right handed male transferred to the Boston V.A. Medical Center for evaluation and rehabilitation three months post onset of a left middle cerebral artery embolic occlusion which resulted in severe aphasia and right hemiparesis. His speech was primarily limited to a hypophonic, poorly articulated "I don't know." Formal evaluation with the Boston Diagnostic Aphasia Examination (Goodglass and Kaplan, 1972) showed a moderately severe auditory comprehension deficit with better comprehension for sentence length material than for single words. He was unable to produce series or automatic speech or to repeat and name more than an occasional item. He did not respond to phonemic or sentence completion cueing. He produced neither words nor melodies for popular songs. Reading comprehension and writing were profoundly impaired, although he accurately read seven out of ten words aloud. L.T. was severely apraxic for representational bucco/facial tasks both to command and to imitation. Gestural/limb praxis was moderately impaired to command but improved to imitation. Computerized tomographic scan showed a left subcortical lesion in the putamen and part of the anterior limb of the internal capsule. There was no cortical involvement of either Broca's or Wernicke's area.

Patient C.M. was a 56 year old right handed man referred to the Boston V.A. Medical Center for further rehabilitation two months after a left cerebral vascular accident resulting in severe aphasia and right hemiplegia.

His speech consisted of the stereotypies "oh-oh" and "oh-win-ee-o" along with occasional real words such as "yes" and "no." BDAE evaluation showed moderate auditory comprehension deficits and total inability to repeat, name, read aloud, or produce series speech. He did not respond to phonemic or contextual cues and produced neither words nor melodies for popular songs. Reading comprehension and writing were better than auditory comprehension and speech, but writing was limited to single substantive words. Praxis testing showed severe bucco/facial apraxia but less impaired gestural/limb involvement. CT scan showed a patchy cortical lesion in Wernicke's area with a more complete lesion in the white matter deep to Wernicke's area. The largest portion of the lesion involved the anterior supramarginal gyrus, corona radiata, and periventricular white matter lateral to the body of the lateral ventricle. There was no lesion in Broca's area either cortical or deep to it.

Patient M.G. was a 57 year old left handed male admitted to the Boston V.A. medical Center for further rehabilitation three years following a massive right hemisphere infarct which resulted in a severe aphasia and left hemiparesis. His conversational speech consisted primarily of stereotypic phrases such as "that's right" and "real good." BDAE evaluation showed moderately impaired auditory comprehension and little naming ability. Series speech and recitation were limited, but he was able to produce reasonable tunes for popular songs. Repetition was limited to some single words. With effort he read three out of ten words aloud but no sentences. Reading comprehension was somewhat better than auditory comprehension, but writing was as severely impaired as verbal output. Praxis testing showed moderate bucco/facial apraxia and mild limb apraxia. The CT scan showed a large white matter lesion of the right hemisphere which extended deep to Broca's area, the frontal horn, and other subcortical structures. A right temporal lobe lesion involved the inferior, middle, and superior gyri, while a right frontal lesion involved cortex above Broca's area in the precentral gyrus extending deep to the ventricles. A large parietal lobe lesion involved the supramarginal gyrus, cortically and deep into the ventricle. As was the case with the aforementioned patients, no lesion was found in Broca's area cortically. It should be noted, however, that the three patients had different lesion sites from each other, and that none of the lesions fit those of classifiable aphasia syndromes (Naeser and Hayward, 1978).

Treatment Program. The Voluntary Control of Involuntary Utterances program begins by presenting each patient with printed words or phrases which he has been heard to utter during his formal evaluation, or with emotionally laden words which Landix, Graves, and Goodglass (unpublished study) found easier for aphasic patients to read aloud than concrete and nonemotional words. If the patient is immediately able to read the word or phrase correctly, it is printed on an index card to be used for self-monitored drills. If, instead of reading the word as printed the patient utters a different real word, then the original word is discarded and the patient's real word utterance is offered. For example, Patient M.G. was shown the word "honest." He said "a lie." When "a lie" was printed, he immediately read it correctly, so the word "honest" was discarded and the phrase "a lie" was added to his index card file. In this manner, each patient's real word errors become correct responses. Oral reading of the growing lists then gives way to more volitional, propositional use of the target words through responsive naming and confrontation naming tasks, then expository speech tasks, and finally in conversation.

RESULTS

Pre and post treatment BDAE testing served as the formal measure of the effects of V.C.I.U. Of particular interest was the patients' responses on the naming subtests of the BDAE, which include responsive naming such as "What color is grass?", "How many things in a dozen?", confrontation naming of objects, geometric forms, colors, letters, numbers, actions and body parts, and word list generation of animal names. We were also interested in pre and post treatment responses on oral reading, given the nature of the treatment program.

Over a five month period of time, L.T. showed positive change on all naming tasks, with the most improvement occurring on confrontation naming. Although L.T. had an index card lexicon of 290 words and phrases which were read correctly and which could be used in natural speech settings, his BDAE oral reading scores remained unchanged. Because the words and phrases found on the BDAE did not necessarily coincide with the patient's own lexicon, the BDAE scores did not reflect L.T.'s actual linguistic capacities (Figure 1).

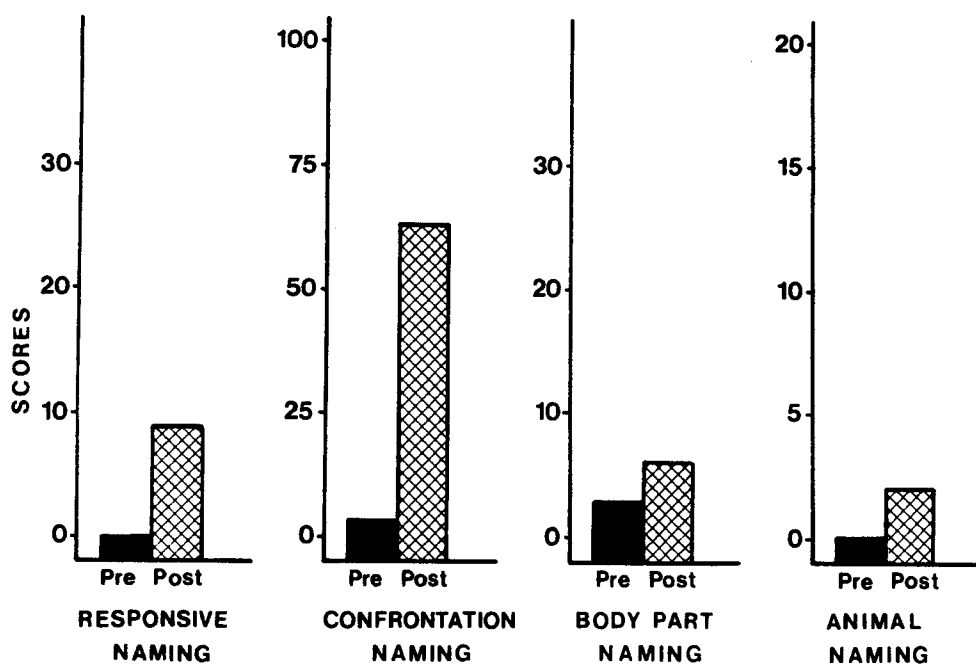


Figure 1. Pre- and post-treatment BDAE naming scores for Patient LT.

Over a six month period, C.M., who had virtually no naming skills prior to V.C.I.U. treatment, improved on each subtest with the greatest gains occurring on confrontation naming. His pre and post treatment reading scores remained unchanged and do not reflect his ability to read aloud 271 of his self-determined words and phrases with good consistency, and furthermore, to use these in a conversational situation (Figure 2).

Over a three month time period M.G. showed improvement in all but body part naming skills. Although BDAE oral reading never exceeded the three words he read aloud before V.C.I.U. treatment, his file card lexicon grew to 259 words and phrases he used voluntarily for daily communicative purposes (Figure 3).

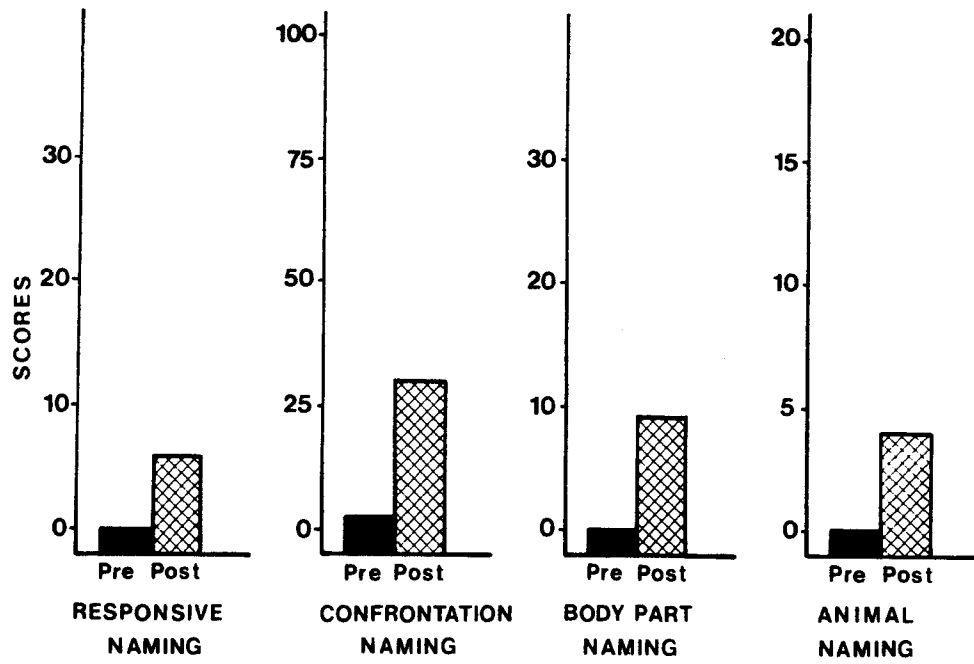


Figure 2. Pre- and post-treatment BDAE naming scores for Patient CM.

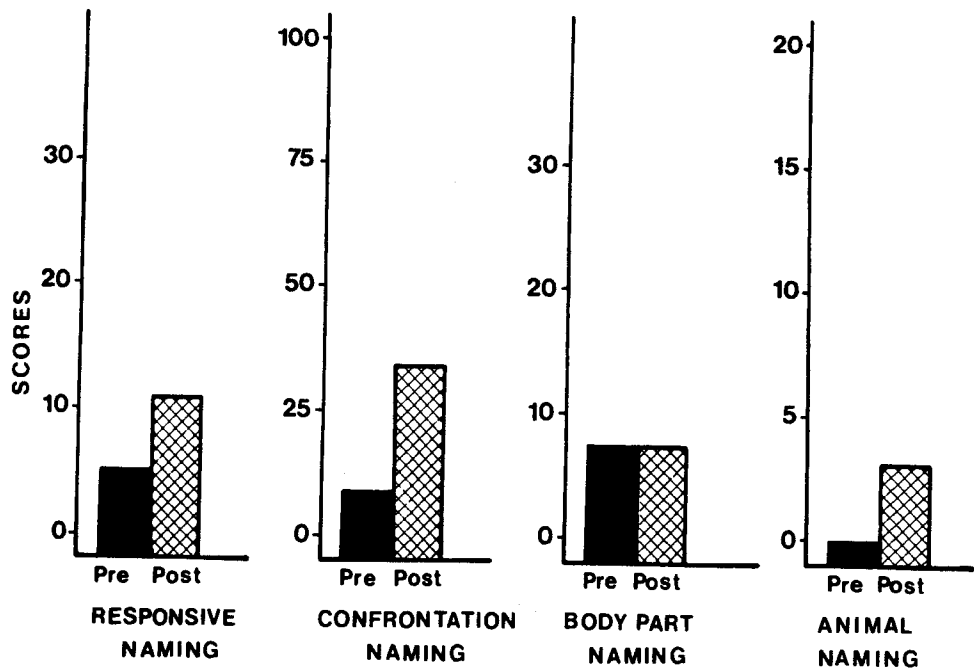


Figure 3. Pre- and post-treatment BDAE naming scores for Patient MG.

DISCUSSION

In 1962, Goda suggested that clinicians use the patient's spontaneous speech attempts to determine treatment vocabulary, rather than relying on prepared materials for language rehabilitation. In a 1964 study of language rehabilitation, Vignolo stated that "responses should be as 'physiological' (i.e. usable in real communication) as possible." In eliciting responses, facilitation is looked for along the lines of the Jacksonian automatic-voluntary dissociation. First an automatic way to elicit a correct response is found. The response is then tentatively elicited in more voluntary ways."

Despite this apparently sound reasoning, we know of no method which has systematically explored this idea with a group of aphasic patients. In the approach called Voluntary Control of Involuntary Utterances, the vocabulary is determined involuntarily by the patient. The one criterion guiding the clinician is that only the patient's real word utterances are accepted. Because of the high success rate and limited struggle imposed by these words, patients have been able to practice independently or with other patients, nursing staff, or family members. The fact that patients who responded only to the V.C.I.U. approach had unclassifiable but clinically similar syndromes may be highly significant. For this group of patients, it appears to be an important methodological development.

Finally, a review of our patients' lists has shown that certain words and phrases appeared on all three or two out of three of the lists. In order to provide clinicians with stimuli for initiating V.C.I.U. with patients, a list of words has been compiled (Appendix). The object, of course, is not to force the patient to say these particular words, but to use them to stimulate the patient to utter real words of his own which will form the basis for his individualized lexicon.

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Appendix

V.C.I.U. Master List

<u>a</u>	<u>d</u>	<u>j</u>
alright	dammit	*juice
apple	dance	
army	dive	
	doctor	<u>l</u>
		*love
<u>b</u>	<u>e</u>	*lunch
*ball	ears	
*book	eat	
*bye	egg(s)	<u>m</u>
baby		*milk
big		*Monday
blue		
Boston	<u>f</u>	*money
box	*four	mad
boy	fall	man
breakfast	fine	map
bridge	fish	maybe
bug	five	me
		more
		much
		my
<u>c/k</u>	<u>g</u>	
*coke	*go	<u>n</u>
*key	*good	*no
cake	give	name
call		news
car	<u>h</u>	nice
care	*ham	nose
cat	hello	nothing
clothes	hi	nurse
coat	him	
cold	home	<u>o</u>
comb	horse	*okay
come	hotdog	orange
cut		out
kick		
<u>ch</u>	<u>i</u>	
chair	*I don't know	<u>p</u>
cheese	I	
chew	I think	paper
church	ice	pen

*words from all three patients' lists

Appendix (Continued)

r

round
run

u

up

s/sh

*see
*shoe(s)
*show
school
seem
sit
sleep
snow
shame
sheep
shit
shower
shut

y

*yes
you

t/th

*tie
*time
*two
tea
ten
tire
TV
thanks
three
that's right

/w/

*one
*watch
*what
one time
war
warm
wash
what time
when

DISCUSSION

- Q: Are the words used in V.C.I.U. ones that patients might have an opportunity to use everyday?
- A: Some of the words may be somewhat unusual, but if you examine the list we provided you, you will see that most of these patient-determined words are potentially useful in everyday settings.
- Q: Do the patients you described have lesions such as we would come in contact with?
- A: Although none of our patients had lesions typical of a specific aphasic syndrome, it is not unusual for us to see patients with atypical lesions and syndromes who may respond to this method.
- Q: Have you tried this approach with classic Broca's, for example?
- A: No, we have not, but it might be a useful way to determine treatment vocabulary for some other approaches, such as melodic intonation therapy.
- Q: One more comment to tie this in with another area of literature. Silvia Ashton-Warner taught reading to Maori children in New Zealand by asking children to say five words that are important to them and then writing them down on separate cards for the children to read. She discovered five "organic" words which children could usually read. These words, "mommy," "daddy," "kiss," "frighten," "ghost" are related to yours, although they are children's words.
- A: This same approach has been taken by John Muma who has children with reading disabilities read texts made up of their own discourse. He calls it systematic extension of the available repertoire.
- Q: Have you done word frequency analysis of your word list?
- A: No. Most of the word frequency tables refer to words as they appear in print so are not really applicable to our list.
- Q: Do you consider consistency? If you show him "scrod" and he says "watch" and you show him "watch" and he says something else, what do you do?
- A: It's been our experience that if you show a patient a word and he says another, there is a good rate of success with the second word, but if the patient uses a literal paraphasia, even if he self-corrects, we do not use that word. After all, one of the major benefits of the technique is for patients to be able to practice with the cards by themselves with good success. If there is struggle involved, we would not use that word.
- Q: I guess I don't know what you do after you have 250 or so words. Do you get generalization? Do you stay there, or what?
- A: The reason we stopped at these numbers and reported them is because all of the patients went on to some other form of therapy. One patient went to a syntax program in which the phrases and sentences were comprised of words from his V.C.I.U. list. Another patient was transferred and is receiving more traditional therapy elsewhere. The third patient is in a form of M.I.T. which again draws on his core vocabulary.