Anomia in Sesotho: the role of parameters in therapy

Abstract.

South Africa as a multilingual country, offers the opportunity for examining the interaction between aphasic symptomatology and linguistic parameters. This paper describes an intervention study with two Sesotho speaking individuals with anomia. Words lists were designed using non aphasic participant and three therapeutic cueing techniques for anomia were evaluated over a period of four months. Findings suggested a positive response to the techniques of true phonemic cueing and prosodic cueing, whereas initial phonemic cueing (a technique commonly used for English speaking anomic patients) had no impact. This supports the need for a parametrically- informed approach to aphasia therapy.

Proposal

Multilingualism is widespread in South Africa. There are 11 officially recognized languages and the intricacies of language usage are linked to the country's complex socio-political history. Clinicians must often provide therapy to clients who speak languages which have rarely been the focus of clinical study. This context provides a powerful impetus to the clinician to develop culturally relevant methods of assessment and therapy.

Models developed for use with clients who speak English may not be suitable for speakers of other, parametrically- diverse languages. A commonly used therapy technique for speakers with anomia is initial phonemic cueing (Nettleton and Lesser, 1991; White-Thompson, 2001; DeDe, Parris and Waters, 2003; Maher and Raymer, 2004; Best, Herbert, Hickin, Osborne and Howard, 2002) which works well for many English words because of the nature of English morphological affixes. However, languages such as Sesotho feature systems of noun class prefixes (Guma, 1971). Nouns are divided into classes; each noun class has a set of affixes, which are used to denote number or to cohere the nouns to qualifiers in sentences (Mokoena, 1998). Crucially, in Sesotho number morphology is affixed to the beginnings of stems (Guma, 1971). For example, in the *ma-/bo* class, the prefix *ma-* is used for singular nouns (*matho* 'person') while *ba-* is used to plural nouns (*batho* 'people') (Mokoena, 1996).

Using *d-* as a cue for the target word *dinkwe* 'tigers' when working with a Sesotho speaking person is equivalent to cueing an English speaking person by telling him/her the same word ends in *–s.* In Sesotho, initial phoneme cues for nouns may amount to morphological cues and may be of limited utility for clients with a phonological anomia.

Another difference between English and Sesotho relates to suprasegmental aspects of speech. While English is a foot-timed language (Ladefoged, 1975), Sesotho is syllable- timed (Zerbian and Barnard, 2008). Thus, the stress always falls on the pentultimate syllable in a sentence (Doke and Mofokeng, 1974). The stress allocation patterns of Sesotho are less intricate than those of English and have potential to suggest clinically effective cueing techniques.

Given the above parametric properties, it becomes clear that some standard therapy techniques for anomia may be not be successful in treating Sesotho-speaking persons with aphasia. More linguistically- attuned cueing techniques are required.

This paper reports on a preliminary study which examined the effectiveness of cueing-based treatment techniques in facilitating improved naming performance. Three treatment conditions were investigated: traditional initial phoneme cueing, true phonemic cueing and prosodic cueing. The first technique is ubiquitous in the literature while the other two techniques were derived from an understanding of the parametric differences between English and Sesotho in terms of morphosyntax and prosody.

Two bilingual Sesotho-English speakers with post-stroke anomia participated in the study. Both presented with a phonological anomia. T. was diagnosed as having classical anomia while S. displayed symptoms consistent with output anomia.

As standard aphasia naming tests have little validity in the population studied, initially four community- referenced word lists were developed for use on this study using ten neurologically unimpaired age- matched Sesotho speakers:

- BODY PARTS: 20 items (10 treatment, 10 untreated semantically related).
- FOOD AND DRINK: 20 items (10 treatment, 10 untreated semantically related).
- HOUSEHOLD ARTEFACTS: 20 items (10 treatment, 10 untreated semantically related).
- ANIMALS: 20 items (10 treatment, 10 untreated semantically related).

Next efficacy of the cueing strategies for facilitating improved confrontation naming were compared. Relative treatment efficacies were investigated in a multiple-baseline design (McReynolds and Kearns, 1983). A culturally and linguistically matched research assistant was involved in this phase.

Condition 1: (Prosodic cue, PROS): Use of a prosodic cue. In this condition, the researcher provided a non-phonemic, hummed version of the word featuring the correct number of syllables. All hummed syllables consisted of a repetition of /m/ ('mmmm'). The hummed syllables reflected the relative stress patterns of the word (e.g. for the target *sefate* 'tree' the stress falls on the second syllable).

Condition 2 (Initial phoneme cues, IPC): Use of initial phoneme cues. In this condition, the researcher provided the first phoneme of the inflected word (e.g. for the target *lehapu* 'watermelon' the cue /l/ was provided).

Condition 3 (True phonemic cues, TPC): Use of true phonemic cues (provision of the first phoneme of the bare uniflected/underived stem). In this condition, the researcher provided the true phonemic cue for the word (e.g. for the target *leoto* 'foot' the cue /o/ was provided). This technique was hypothesized to increase activation at the phonological level.

In order to measure gains associated with each cue type, each condition was allocated specific word lists.

Pre-and post-intervention scores of naming ability on treatment lists and four lists of semantically related words (untreated) were compared. The treatment conditions were evaluated in terms of three constructs : potency (the degree to which a technique helps a speaker relearn words directly targeted in therapy), semantic generalizability (the degree to which a technique helps a speaker relearn words semantically related to those directly targeted in therapy) and persistence (the degree to which therapy effects are long-lived.). The sign-test was used to determine statistical significance

Results

In both participants, initial phoneme cueing strategies were not associated with statistically significant growth in naming ability when using treatment lists as stimuli.

In both participants, true phonemic cueing and prosodic cueing were associated with statistically significant growth in naming ability when using treatment lists as stimuli.

No significant differences occurred across time in the untreated semantically related word lists for either participant . Follow up testing after the conclusion of the study showed no significant decrease in any of the gains made during the intervention portion of the study were noted one month after the conclusion of the study. Participants showed a differential response to the therapy techniques.

Further, our results tentatively suggest some possible additional refinements to current models of word retrieval. Some controversy still exits as to where in mental lexicon models affixes are stored (Janssen and Penke, 2002). The findings of the present study suggest that affixes appear to be stored at a lexical or lemma level rather than at a phonological level because initial phoneme cues were ineffective at facilitating improvements in naming performance in Sesotho speakers with phonological anomia. The breakdown in such speakers is believed to occur at a phonological level. In Sesotho initial phoneme cues provide activation at the lexical level and thus did not help to compensate for deficits at the phonological level. As regards prosodic encoding, current mental lexicon models poorly specify the location or role of systems pertaining to suprasegmental structure (Lagarno, 2008), and these results suggest the need for further consideration of this element.

The results of this study suggest the global aphasiologist cannot rely on English language models for the effective treatment of anomia. The local community needs to play a role in developing materials for use in therapy and assessment and a parametrically informed approach, which draws heavily on cognitive neuropsychology, may be helpful in furnishing speech-language pathologists in South Africa with the tools they need to provide services in challenging environments.

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