

A Framework to Guide Treatment Planning in Aphasia

Clinical practitioners in aphasia typically make decisions regarding the selection and design of interventions based on the nature and severity of the language deficit as well as the functional needs of their patients. Ideally, such decisions are informed by treatment research, particularly with regard to discernment of the best candidates for a given treatment. In clinical practice, treatments are often administered in sequence so that one approach is preparatory for the next, and subsequent plans are dependent upon response to initial interventions. It is rare, however, that treatment studies examine a sequence of approaches, and such schema have not been put forth for scrutiny. It appears, at this juncture, that the field would benefit from elaboration of an overarching paradigm or set of alternatives that would guide practitioners in clinical decision-making over the course of rehabilitation. The purpose of this paper is to generate such a framework, which can be examined for face validity and empirical evaluation. Ideally, this endeavor will assist in the refinement of practice guidelines for aphasia treatment, as well as clarify areas that will benefit from future research.

Method

A comprehensive review of the aphasia treatment literature yielded approximately 700 empirical studies published since 1949. Treatments were clustered by common dependent variables, that is, with regard to the behaviors that were targeted for change. This required grouping of treatments that were somewhat different in their approach, but yet had common treatment goals. For example, treatments to improve syntactic comprehension/production were grouped together regardless of whether they involved computer-based programs or not. In reviewing the literature, consideration was given to the characteristic features of individuals who would be considered appropriate candidates for the various treatment approaches.

Using a qualitative, evaluative approach, a decision tree was generated to sort and order treatment options in a manner thought to best address a continuum of language impairments across modalities and severity levels. The framework was iteratively amplified and simplified as it was evaluated relative to the treatment literature until it appeared that essentially all relevant treatment options were considered.

Results

Figure 1 depicts the sequence and ordering of treatment options that emerged on the basis of current treatment research in aphasia, alexia, and agraphia. Although presented in the context of a decision tree, it should be evident that the model does not reflect strict adherence to a single path. Rather, some treatments might be implemented in parallel, and it is expected that improved performance may allow consideration of treatment approaches that were not appropriate at the outset.

The decision tree is ordered in a manner that generally reflects greater to lesser levels of language impairment from top to bottom and left to right in Figure 1. The first bifurcation reflects an initial decision regarding the status of spoken language abilities: markedly impaired versus usable spoken language. This admittedly crude distinction could be operationalized using

objective criteria, however it simply reflects whether or not an individual has adequate, intelligible spoken output for communication or not. If not, treatment options include nonverbal approaches intended to maximize communication despite limited spoken output, or treatments intended to facilitate or improve spoken language abilities (See Figure 1). Treatments for spoken language are elaborated first at the lexical level and then at the sentence level. Written language treatments are presented in parallel (and sometimes interactive with) spoken language treatments. It should be noted that whereas output modalities are emphasized in the organization of this proposal, it is intended that receptive language skills be addressed at every stage.

A brief explanation of the decisions and representative example treatments depicted in Figure 1 are included below:

1. Treatments for those with markedly impaired speech production
 - a. Nonverbal treatments (any one or combination of the following)
 - i. Augmentative communication approaches
 - Training in low technology approaches, such as personalized communication book
 - Training in the use of computer-based communication devices
 - ii. Drawing for communication
 - iii. Gesture for communication
 - Visual action therapy (VAT)
 - iv. Lexical writing treatment
 - Copy and recall treatment (CART)

Note: Nonverbal treatments may be followed by training in multimodal approaches to conversational communication.

- b. Verbal treatments
 - i. Oromotor speech production treatments
 - Treatments for apraxia of speech
 - ii. Treatments to facilitate speech production
 - Melodic intonation therapy (MIT)
 - Gesture to cue speech production
 - Stimulation treatment for production (e.g., repetition treatments)
 - iii. Treatments to promote speech production
 - Constraint induced language therapy (CILT)

Note: With improved spoken production abilities, treatment can progress to those for speech production elaborated below.

2. Treatment for those with speech production adequate for intelligible communication
 - a. Treatments for Written Language (i.e., single-word spelling and reading)
 - i. Lexical treatments
 - Comprehension and production of written words, e.g., Copy and Recall Treatment (CART) with spoken repetition
 - Successful response to treatment, consider

- a. Proceed to phonological treatment
 - b. Proceed to orthographic self-cueing of spoken productions
 - ii. Phonological treatments
 - Sub-lexical training for sound-letter and letter-sound correspondences
 - Successful response to treatment, consider
 - a. Proceed to interactive spelling treatment
 - b. Proceed to phonemic self-cueing of spoken productions
 - iii. Interactive spelling treatment
 - Training interactive use of residual lexical and sub-lexical orthographic knowledge
 - a. Implement concurrent with spoken lexical retrieval treatments as appropriate
 - Successful response to treatment, consider
 - a. Proceed to sentence-level treatments for written and spoken language
 - b. Treatments for Spoken Lexical Retrieval
 - i. Stimulation treatments
 - Cueing hierarchies for lexical retrieval
 - Constraint induced language treatment (CILT)
 - ii. Orthographic treatments
 - Orthographic self-cueing of speech production
 - iii. Phonological treatments
 - Phonemic self-cueing of speech production
 - iv. Semantic self-cueing of speech production
 - Semantic Feature Analysis (SFA)
3. Treatments for those with adequate language to work at the sentence level
 - a. Pragmatic training in the use of residual and retrained spoken and written language skills
 - Script training
 - Spoken + written conversation training
 - b. Text-reading treatments
 - Oral reading for language in aphasia (ORLA)
 - Multiple oral rereading (MOR)
 - c. Morphosyntactic treatments
 - i. Morphology treatments
 - Retrain specific morphological markers
 - ii. Syntax stimulation
 - Treatments to improve syntactic comprehension and production (HELPSS)
 - iii. Verb treatments and thematic role training
 - Mapping therapy
 - Verb Network Strategy Training (VNeST)
 - iv. Training Complex syntactic constructions
 - Treatment for Underlying Forms (TUF)

- Treatments for those with adequate spoken and written language to work at a discourse level.

Discussion

The framework presented here aims to clarify clinical intervention options for individuals with aphasia for a range of impairment levels. The proposed plan is intended to be adequately flexible so that treatment alternatives and sequential order options are evident, but decision-making is ultimately determined on the basis of individual characteristics, priorities, and response to previous treatments. This framework should serve to highlight the range of evidence-based treatment approaches available for specific intervention goals. When the treatment sequences are considered relative to the existing aphasia treatment studies, it also calls attention to research needs in order to fill gaps in the literature. In sum, the framework presented here is intended to solicit feedback from clinical aphasiologists, so that it may ultimately result in a useful component of practice guidelines for aphasia treatment.

Figure 1. A guide for aphasia treatment planning.

