Treatment methods for anomia in aphasia

According to Brookshire (2015), aphasia has many etiologies, such as stroke, infection, brain abscess, brain tumor, nutritional deficiencies, or toxemia. However, the most common cause of aphasia in adults is cerebrovascular accident, which includes several types and classifications for aphasia. A patient may not neatly fit into one of these categories and may have a comorbid disorder such as apraxia or dysarthria (ASHA, 2018). The focus of this paper will be anomia or the inability or impaired ability to retrieve and produce words in aphasia, and this paper will specifically target what anomia in aphasia looks like, what assessments are available, and what treatments have been proven effective.

Although one would assume that anomic aphasia is the only aphasia in which word retrieval is difficult, most aphasias present with some kind of anomia. Consequently, anomia is not attributed to a specific lesion in one area of the brain. Patients who struggle with anomia tend to demonstrate pauses in their speech, use circumlocution, or use nonspecific words for specific words. According to Goodglass (1993), there are four types of aphasia where anomia is present: frontal anomia, anomia of the angular gyrus, anomia of the inferior temporal gyrus, and anomia as an expression of residual aphasia. The distinguishing factor in frontal aphasia is the patient’s ability to retrieve the word they are looking for with a simple cue of offering the first sound of the target word. The key feature of anomia of the angular gyrus is the client’s inability to retrieve the word and the lack of recognition when it is provided by the examiner. Patients who experience anomia of the inferior temporal gyrus demonstrate severe anomia, although they speak fluently and grammatically. Lastly, anomia as an expression of residual aphasia often

refers to patients that previously demonstrated a severe form of another aphasia and have recovered most language functions except for word retrieval (Brookshire, 2015).

Assessment in Aphasia

When assessing for aphasia, the speech-language pathologist (SLP) will include the typical components of most evaluations, such as a case history, a self-report, and an oral-motor examination to differentiate between a language-based and motor-based deficit (ASHA, 2018). SLPs use several diagnostic batteries. However, when specifically looking for assessments that target word-finding abilities, Pindzola, Plexico, and Haynes (2016)found the following tests to be appropriate: the Boston Naming Test (BNT-2) (Kaplan, Goodglass, & Weintraub, 2001), the Test of Adolescent and Adult Word Finding (TAWF) (German, 1990), and the Neuropsychological Test of Verbal Conceptualization and Fluency (Reynolds & Horton, 2007). Pindzola et al. (2016) also noted that occasionally some SLPs evaluate vocabulary through the means of the Peabody Picture Vocabulary Test (PPVT-4) (Dunn & Dunn, 2007) or the Expressive Vocabulary Test (EVT-2) (Williams, 2007) as an approximate indicator of single-word recall.

Various Treatment Approaches

Brookshire (2015) briefly refers to a few treatment options that will assist in the recovery of word retrieval. Sentence completion tasks, word and phrase repetition, confrontation naming drills, and cueing hierarchies are all methods of treatment that are deemed appropriate, although some may be more effective than others. Sentence completion tasks consist of a phrase or

sentence where the last word is not stated, and the client has to fill in the blank, for example, we park our car in the __. Brookshire (2015) explained that these tasks “ can help get volitional speech from patients who on their own can produce little more than automatisms and stereotypic utterances” (p. 233). The downside to sentence completion tasks is that there is little carryover once therapy has ceased.

van Hees, Angwin, McMahon, and Copland (2013) and Brookshire (2015)all recognize that cueing hierarchies have been effective in the treatment of anomia. van Hees et al. (2013) conducted a study comparing Semantic Feature Analysis (SFA) and Phonological Components Analysis (PCA), two types of treatment used in patients with anomia. Previous research had found both forms of treatment to be effective; however, other studies had a few flaws that van Hees et al. (2013) wanted to address. The researchers separated the eight participants into three groups – predominantly semantically impaired individuals with aphasia, predominantly phonologically impaired individuals with aphasia, and individuals with aphasia who have different loci of impairments. This was determined from whether the participants’ results on the Pyramids and Palm Trees Test (Howard & Paterson, 1992) were impaired or not, along with a few other criteria. The study alternated between the two treatment styles with the expectations that participants with semantic issues would benefit from SFA, participants that demonstrated phonological deficits would benefit from PCA, and individuals whose locus of impairment was different would demonstrate no improvement.

Methods of Treatment in van Hees et al. (2013) and Methodology

Treatment targeted 90 words that were divided into three sets of 30 items; each set was assigned to either the SFA or PCA or an untreated control set. Each picture from the set of words was displayed on a computer via a PowerPoint, and treatment cues varied depending on the type of therapy that was provided. SFA treatment involved the following cues: group, action, properties, location, and association. PCA treatment cues were as follows: first sound, syllables, last sound, association, and rhyme (van Hees et al., 2013).

Results fromvan Hees et al. (2013)

Both groups reported significant improvement on items that were treated. Initially, seven out of the eight participants advanced significantly in their naming precision following the PCA. After treatment, six out of the eight participants maintained their improvement after their 2-3-week follow-up. When it came to SFA treatment, four out of the eight members showed improvement originally; however, only three of the four preserved progress on treated items at their follow-up. To measure generalization from untreated items pre-treatment to post-treatment, the patients were administered the Boston Naming Test (BNT; Kaplan, Goodglass, & Weintraub, 1983). Although all of the eight participants showed improvement, only one showed significant improvement (p=. 03, one-tailed) on untreated words, which indicated some generalization(van Hees et al., 2013).

In summary, van Hees et al. (2013) found the relationship between the locus of breakdown in word retrieval and the participants' responses to the two types of treatment to be intricate. According to the results, individuals with

semantic impairments demonstrated significant improvements on items addressed through the PCA treatment while individuals with post-semantic impairments benefited from the PCA treatment and the SFA treatment. To capture broader implications of these findings, further research would need to be conducted with a larger group.

Another form of word-retrieval therapy that ASHA (2018) and Brookshire (2015) recommend is Verb Network Strengthening Treatment (VNeST). This therapy utilizes verbs to ask the participant to name agents and patients that are associated with the verb. For example, Edmonds, Nadeau, and Kiran (2009)use the verb “ measure” and had the participant name agent-patient pairs such as *chef/sugar* and *surveyor/land* anticipating that this will allow for carryover. Their study set out to answer whether the verb training set using the VNeST treatment would assist the participants in naming an agent-verb-patient response on treated and untreated materials when given a novel picture. In addition to this, Edmonds et al. (2009) wanted to see if generalization effects stabilized.

Method of Treatment inEdmonds et al. (2009)Research

This study consisted of four participants with aphasia due to left-hemisphere stroke 9+ months prior. All participants were monolingual English speakers, demonstrated impaired vocabulary access, demonstrated no other learning disorders, were right-handed prior to stroke, and demonstrated adequate hearing, vision, and comprehension. Pre-treatment testing showed variability across all patients in their types of naming errors. The materials used were 10 pictures containing 10 of the targeted verbs, 6-8 cards for each verb that

consisted of 3-4 agents and 3-4 patients. In addition to this, five cards containing (who, what, where, when, why) and 12 sentences that contained the various target verbs divided into four groups: correct, inappropriate agent, inappropriate patient, and thematic reversal (Edmonds et al., 2009).

Results of Edmonds et al. (2009) Treatment

Edmonds et al. (2009)found that three out of the four participants met the generalization criteria for sentences that contained targeted verbs. The one participant that did not missed the criteria by 10%. When it came to the untargeted verbs, Edmonds et al. (2009) noted that all participants attained the generalization criteria. Assessments were conducted again one-month post-treatment and all three participants demonstrated maintenance ranging from 20 to 60 percent above the maximum baseline value, except for participant 4 who was unavailable (Edmonds et al., 2009). In addition to this, the research showed that gains were made amongst all participants in the area of single noun retrieval and three participants exhibited improvement in the single word verb recall. Noun and verb retrieval also carried over to connected speech tasks in three out of the four participants. In conclusion, the VNeST treatment approach proved to be a promising treatment approach when addressing generalization of lexical retrieval in the small sample observed in this study.

ASHA (2018) suggested that another evidenced-based practice treatment known as gestural facilitation of naming. This approach uses gestures to facilitate noun retrieval in individuals with aphasia. Lanyon and Rose (2009)and Rose (2013) recognized the significance behind gestures in the

ability to assist with word retrieval. In Lanyon and Rose's (2009) observational study, they examined arm and hand gestures in video-taped interviews of participants with aphasia to see if it supported the individual with their word production. In addition to this, they studied the types of gestures that were effective and the time difference between the gesture and successful retrieval.

Procedure for Lanyon and Rose's (2009) Observations

The observational study analyzed videotapes of 18 participants with aphasia that were previously recorded from another aphasia research project. The participants were asked four open-ended questions to provoke conversation. If there was limited information shared, the interviewer used probing to elicit more conversation. Lanyon and Rose (2009) classified each production into three categories: word retrieval difficulty, resolved word retrieval, and fluent utterances. Gestures were also categorized into four groups: iconic gestures, pantomime, emblems, and beat gestures.

Summary of Lanyon and Rose's (2009) Observations

During the researchers' review, a total of 664 word retrieval difficulties were noted amongst 16 of the participants with the exception of two participants due to the severity of their aphasia(Lanyon & Rose, 2009). Of this total number, 435 word retrievals difficulties happened with a gesture present while the remainder occurred without a gesture present (Lanyon & Rose, 2009). However, the researchers did not find these results to be statistically significant. Results varied amongst the participants due to severity of aphasia. Consequently, Lanyon and Rose (2009) decided to analyze the

results from the five outliers; and although no statistical significance was found, over 50% of successful word retrievals were paired with a gesture. The researchers believe the results indicate that gestures are multifunctional for individuals with aphasia. In review of several studies, Rose (2013) believes further analysis of gestures in aphasia treatment will yield promising results.

Summary of Studies

In conclusion, most patients with aphasia exhibit anomia regardless of the cerebrovascular accident's etiology. As a result, finding treatments that demonstrate improvement and generalization into other areas of a patient's life is critical. van Hees et al. (2013) and Brookshire (2015) all find SFA treatment and PCA treatment to be effective in patients with anomia. In addition to these treatments, Edmonds et al. (2009), ASHA (2018) and Brookshire (2015) found VNeST treatment beneficial in word retrieval therapy. As for gesture facilitation in word retrieval, further analysis needs to be conducted to find it statistically significant (Lanyon & Rose, 2009; Rose, 2013). Most of the studies addressed throughout this paper consist of small sample sizes. Consequently, further research with bigger sample populations may offer more insight into treatment affects across the population.

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