

Aphasia disrupts multiple language processes with anomia being one of the most common and persisting deficit. Individuals may use a variety of compensatory strategies to circumvent the problem, including writing, gesturing, and drawing (Farias, Davis, & Harrington, 2006). However, few formal programs have promoted drawing as a means to facilitate communication. Approaches available typically use drawing as a language substitute rather than as a catalyst for enhancing verbal expression (Sacchett, 2002) and there has been minimal focus on drawing as a compensatory strategy for word retrieval (Lyon, 1995). Furthermore, training usually emphasizes recognizing drawing rather than a format for information exchange (Morgan & Helm-Estabrooks, 1987; Sacchett, 2002).

Semantic Feature Analysis (SFA) is a treatment approach based on the premise that although anomic individuals have difficulty retrieving words, ability to access semantic features of targets may be somewhat intact (Beeson, Holland, & Murray, 1995). The semantic system is accessed by producing words related to target words; in SFA, individuals incorporate these strategies as self-cues to retrieve target words (Boyle, 2004; Rider & Wright, 2008). To date, this approach has been used primarily to enhance verbal output only.

Taylor and Hough (2013) used drawing to explore improvement of word retrieval skills in a woman with chronic mixed aphasia. Results revealed improvement in naming treatment pictures with some generalization to untreated stimuli as well as relevant increases on the Boston Naming Test-II (BNT-II) (Kaplan, Goodglass, & Weintraub, 2001). The current study extends investigation of drawing treatment to examine if two males with chronic nonfluent aphasia improved ability to name pictured objects through a drawing protocol. In individual single subject designs, HR and TE underwent brief but intense treatment, incorporating drawing with SFA to improve retrieval.

Method

HR and TE, 76 and 55 year old, right and left-handed, college-educated males, respectively, with mixed aphasia from left hemisphere CVA, were participants. HR and TE were approximately 10 and 6 years post-stroke, respectively, both with limited verbal output but adequate auditory comprehension skills to perform the experimental treatment. Although HR exhibited right-sided hemi-paresis, he had the ability to hold writing implements for drawing.

Both HR and TE passed a modified hearing screening for older adults at 40 dB HL at 1K, 2K, and 4K Hz (Ventry & Weinstein, 1992) and the Scanning/Visual Field/Print Size/Attention Screening Task (Garrett & Lasker, 2005) to screen visual abilities. The BNT-II (Kaplan, et al., 2001) and Western Aphasia Battery-Revised (WAB-R) (Kertesz, 2006) were administered to measure naming ability and aphasia severity.

Pretreatment training involved each individual participating in two consecutive days of training on the drawing process, based on Lyon (1987). Sessions lasted approximately two hours each day, consisting of basic skills on how to draw sequentially. Skills taught included: correctly holding pencil/pen, moving hand around paper, tracing, copying pictures of objects, and drawing pictures of objects from memory.

The Classic Aphasia Therapy Stimuli (CATS) (Fogle & Reece, 2005) were used as treatment materials in the intervention protocol. To determine stimulus pictures, both participants named the 90 pictures at three separate sessions. Pictures a participant was unable to name on at least 2/3 trials were used as the stimulus pool for the particular participant. From these, for each participant, thirty nouns were randomly chosen and divided into 15 treatment and 15 probe (untreated) stimuli.

In the experiment, an SFA format in conjunction with drawing was used to examine the effect of drawing on word retrieval and enhanced communication. During sessions, treatment on drawing to name with an SFA cueing script was utilized for treatment pictures. First, the participant was asked to name the picture spontaneously. Regardless of accuracy, the participant proceeded to draw the target using SFA scripts. Scripts used cues: use (“who uses this?”), properties (“what does this look like?”), and associations (“what does this remind you of?”) which were amenable to drawing. Participants attempted to draw each feature and then name the target.

A time series AB design with three baselines was implemented for drawing and naming treatment and probe stimuli for both participants who participated in five treatment sessions, each 1-2 hours, over two weeks. Between days three and four of protocol, the 15 untreated stimuli were probed for naming and drawing of semantic features. Both participants attended a sixth session occurring within five days of the last treatment session and another session approximately one week later, to assess maintenance of treatment strategies. At this session, participants spontaneously drew and named all stimuli (treated and probe).

Results

Multidimensional scoring was used to rate drawing and naming performance with intra-observer and inter-observer reliability at 95%. Data were converted to percentages to determine changes in naming and drawing. Both HR and TE demonstrated notable increases in naming ability. Both also showed generalization to untreated probes, particularly HR.

Drawing results yielded very accurate performance for both participants. Even at baseline, both HR and TE performed at very high accuracy levels, able to draw treatment pictures without assistance. Similar performance was observed for untreated probes.

Effect sizes (ES) were calculated for treatment and probe data, using standard effect size formula. For naming treatment stimuli, ES for HR and TE were 14.06 and 2.15, respectively, representing performance greater than one standard deviation above the mean. This indicates clinically and practically important changes relative to word retrieval ability. ES for naming probe stimuli was significant for HR (1.85), indicating significant generalization but only .21 for TE, indicating minimal generalization. Drawing ES for treatment and probe stimuli for both participants could not be determined because of high initial level of drawing performance and no changes from baseline through treatment.

For standardized tests, no performance changes were noted for either participant on the BNT-II. TE showed subtle improvement in naming on the WAB-R word finding subtests.

Discussion

In the current study, drawing was used to stimulate linguistic verbal output, identifying a manner in which an individual with chronic aphasia and limited verbal output showed more consistency in self-cuing for word retrieval. Overall, both HR and TE made remarkable increases in naming and drawing ability from baseline to treatment end. Although BNT-II performance did not reflect an upward change, TE showed some improvement in retrieval on the WAB-R.

Drawing may facilitate communication because it provides a permanent record of individuals' communication intent, does not rely on language symbols, and represents the most direct route to communicate by bypassing linguistic components of expression (Lyon, 1995). Drawing also may access a different neural pathway to the lexical-semantic system, assisting retrieval of words more effectively (Farias et al., 2006). Thus, drawing of semantic features may enhance word retrieval ability in chronic aphasia.