

## **Introduction**

Poetry analysis is a functional task targeting comprehension and expression within a hierarchical structure. Poetry is a unique integration of language content, form and use and may involve personal relevance to the patient and embedded semantic, phonologic, prosodic and syntactic cues.

The emphasis on comprehension in poetry analysis may prove beneficial because it facilitates complete communicative acts (function), while using a patient's strengths to improve impairments (efficiency). Poetry's linguistic complexity may seem to hinder comprehension, however, current research shows that the increased complexity of targets may facilitate generalization (Kiran & Thompson, 2003; Raymer et al., 2008).

The language surrounding targets in poems can assist in producing that target. Webster, Morris, and Franklin (2005) described a successful treatment of verb retrieval through analysis of noun-verb relationships, including thematic roles of arguments. Poetry typically contains multiple interactions between phonological and semantically related words (i.e. rhyme). This creates an embedded cueing system.

Prosodic cues typically are present in poetry. Magne, Schon, and Besson (2003) described prosody as "a central feature of language acquisition" aiding in structural segmentation of speech and understanding of syntax. Emotional prosody is processed in the right hemisphere and in the basal ganglia (Magne, Schon & Besson, 2003). These areas are typically undamaged in individuals with non-fluent aphasia; therefore emotional prosody could be used as a cue to construct meaning in a poem.

Another beneficial element of poetry is salience. Personal relevance is an important factor influencing acquisition, generalization, interference, maintenance, and neural effects (i.e. plasticity) (Raymer et al., 2008). Cultural relevance affects emotional stimulation, which can temporarily enhance cognitive effects (Hannon & Trainor, 2007).

Therapy goals must be clear to the individual. As Basso and Caporali (2004) explained, "therapy must be varied and stimulating with a clear aim." A hierarchical set of clear goals is easily applied to a poetry-based procedure.

Kagan, Black, Duchan, Simmons-Mackie and Square (2001) described "supportive conversation" as providing an opportunity for individuals with aphasia to express their knowledge, opinions, and feelings. This technique resulted in visibly decreased levels of frustration with increased confidence and verbal communication. Webster, Morris and Franklin (2005) reported the results of a treatment targeting sentence analysis as an increase in sentence production. They hypothesized that this effect reflected the fact that the individual was "encouraged to think." In analyzing poetry, the individual with aphasia is given an opportunity to express his/her feelings and opinions as they relate to the poem.

Text analysis requires both comprehension and production of text meaning. To determine the meaning of a text, the reader must use semantic and syntactic skills to decode the "facts" (Kintsch and van Dijk, 1978). Miller and Kintsch (1980) described influential factors in text comprehension. They found word frequency and sentence length greatly influence the construction and reproduction of text and its meaning. They

also found that over-explanation of semantic relations within a text can impair comprehension. These variables can be controlled within poetry analysis treatment.

Comprehension can also be measured by identification and assessment of topic sentences. McCarthy et al. (2008) described two models in which this occurs. The first is the derived model, context-based and more naturalistic. The second model is the free model, based on syntax, sentence organization, and semantic features within the topic sentence. Poetry typically integrates both models as the text adheres to strict syntactic and organizational structure, while discrete meanings can be interpreted only through full processing of the language.

In a study of poetry analysis treatment in a woman with severe Broca's aphasia, Borsenik and Greenwald (2009) reported a striking increase in MLU and reduction in verbal reaction time after six weeks of treatment and home practice. In the current study, poetry analysis treatment is applied in an effort to increase verbal production in two men with non-fluent aphasia secondary to stroke.

### **Research Questions**

1. Does the use of poetry in treatment of individuals with non-fluent aphasia result in a greater increase in verbal output than the use of prose narratives?
2. Does the use of a song-lyric narrative in treatment of individuals with non-fluent aphasia result in a greater increase in verbal output than the use of a more conventional poem?

### **Methods**

**Participants:** Two male, right-handed stroke survivors with chronic non-fluent aphasia. Participant 1 (P1): 52 years; mild Broca's aphasia; mild apraxia of speech. Participant 2 (P2): 59 years; moderate Transcortical Motor aphasia. Speech and language were assessed using the Boston Diagnostic Aphasia Exam (BDAE) and the Boston Naming Test (BNT; Goodglass, Kaplan & Berresi, 2001).

**Experimental Stimuli and Tasks:** Six narrative stimuli were selected: three poems and three non-poetic narratives. The non-poetic narratives were each matched to one of the poems by content (theme), level of difficulty, and length to form three sets. A single subject treatment design was used. Following two baseline sessions, Sets 1 and 2 were trained (one narrative at a time); Set 3 remained in baseline. Ten target words from each narrative were identified (n=60) and incorporated into verbal picture naming and verbal sentence completion tasks. Target words were matched across set for length, grammatical class, and word frequency (Kucera & Frances, 1982). The trained target words were also elicited in treatment during poetry or prose discussions. A non-word reading task was used as a control task. Baseline, probe and post-test measures were completed for each task separately.

**Treatment Schedule:** Treatment sessions occurred in a university clinic for 25-30 minutes twice per week for approximately 8 weeks (P1) or 7 weeks (P2).

**Procedures:** P1 began treatment with Set 2, while P2 began with Set 1 (assignments based on baseline performances). Both participants were trained with the poem (5 sessions) before moving onto the matched non-poetic narrative (5 sessions); then

the other set was trained (first the poem for 5 sessions and then the non-poetic narrative for 5 sessions).

The training of each narrative followed a set program of cues and analysis questions. The discussion questions were designed both to elicit the target words for the narrative and to provide a functional framework for the discussion. Level 1 discussion questions represented a concrete conceptualization of the narrative, while Level 2 discussion questions represented a more abstract conceptualization. The Level 2 questions were designed to elicit a deeper level of narrative analysis. The treatment was initiated with the Level 1 questions so that the discussion itself was inherently trained in the treatment.

**Scoring:** Responses were scored for accuracy, error type and (when applicable) level of cueing. Responses during the treatment discussions also were transcribed and scored qualitatively.

## **Results & Discussion**

For both participants, the prose narrative stimuli improved little or not at all (average 0-10% improvement across tasks), whereas the poetry analysis treatment yielded significant gains in verbal output (e.g., P1: picture naming average 40%; sentence completion average 50% improvement, and P2: picture naming 50% improvement).

For poem stimuli, P1 displayed a greater increase in accuracy for words targeted from the “conventional” poem stimulus (40% increase) when compared to the song lyric stimulus (10% increase). In contrast, P2 demonstrated greater improvement for the song lyric stimulus (50%) versus the “conventional” poem (0%). Results will be discussed in the context of current hypotheses of word retrieval and rehabilitation.

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