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EFFICACY OF VOCABULARY BOMBARDMENT IN A CLIENT WITH BROCA'S ADITACIA A SINCLE CASE STUDY

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ABSTRACT

Vocabulary Bombardment is an evidence based therapy procedure, in which the client is made to listen to amplified target words only through auditory modality. A standardized set of words are provided in a repeated and intensified manner for a period of time. Individuals with Broca's aphasia have naming difficulties with limited vocabulary, therefore the aim of this study focuses on effect of intense vocabulary bombardment on word retrieval through auditory mode for a client with aphasia. A case study was done on an individual with Broca's aphasia. Method includes a material, which had tasks to recollect words. The test had 12 sub-tests under it, with each sub-test pertaining to a specific category. The client was provided with intervention with this material for a period of 4 weeks and the word retrieval ability was checked. Significant improvement was obtained following the intervention with vocabulary bombardment.

KEYWORDS

Vocabulary bombardment, Broca's aphasia, word retrieval.

INTRODUCTION:

Auditory Bombardment is an evidence based therapeutic procedure, in which the client is made to listen to amplified target words. The client is provided with repeated, intensified and systematic exposure to a set of standardized words. According to Darley, Aronson and Brown (1975), Aphasia is a multimodality reduction in the capacity to decode (interpret) and encode (formulate) meaningful linguistic elements. It is manifested as difficulties in listening, reading, speaking and writing. Aphasia has many sub types, in which Broca's aphasia is one of the more common forms of aphasia which is encountered in clinical setting. Broca's aphasia is a condition marked by the production of slow, laborious speech accompanied by good comprehension, poor repetition and naming. As mentioned, most of the people with Broca's aphasia have naming difficulties, i.e., Anomia. Anomia is a condition characterized by difficulties in finding words needed to express thoughts. Therefore, even though individuals with non-fluent aphasia have good comprehension, they have difficulty in naming, i.e., they face difficulty in recollecting words restricting them to a very limited set of vocabulary. The limited vocabulary hinders them from indulging in general conversations, initiating commands, requesting, to name objects and these are the few difficulties out of all the difficulties they face in their day to day life. Vocabulary bombardment is one technique which is documented to be effective in improving the verbal repertoire.

Sharynne Mcleod & Elise Baker in 2014 conducted a survey on 231 Australian speech-language pathologists (SLPs), to describe practices regarding assessment, analysis, target selection, intervention, and service delivery for children with speech sound disorders (SSD). Results regarding intervention indicate that there were eight approaches that were frequently used in children with SSD: Auditory discrimination (33.5% always and 55.5% sometimes) (e.g. Berry & Eisenson, 1956), Minimal opposition contrast (minimal pairs) (31.3% always and 58.5% sometimes) (e.g. Weiner, 1981), Cued articulation (30.7% always and 42.4% sometimes) (e.g. Passey, 1990), Phonological awareness (26.0% always and 51.5% sometimes) (e.g. Gillon, 2000), traditional articulation therapy (23.4% always and 58.2% sometimes) (e.g. van Riper, 1963), Auditory bombardment (19.9% always and 44.4% sometimes) (e.g. Hodson & Paden, 1991), Nuffield Centre Dyspraxia Programme (11.6% always and 56.3% sometimes) (e.g. Nuffield Hearing & Speech Centre, 2004), and core vocabulary (8.3% always and 56.0% sometimes) (e.g. Dodd & Bradford, 2000).

Lisa M. Gangloff (1991) documented the efficacy of different stages of phonological remediation is limited to the use of minimal pairs and the integration of language therapy to assist children with accompanying language deficits. The result suggests that a languagebased bombardment, in the form of children's stories, would aid in the

reduction of phonological processes and the acquisition of language skills.

A retrospective study conducted by Shrlberg and Kwlatkowskl in 1987 statistically analyzed different teaching strategies and their relation to generalization to spontaneous speech. Auditory bombardment was one of these teaching analyzed. They found that, when auditory bombardment was not a part of articulation and phonological therapy 15% of the targets generalized to spontaneous speech, but when auditory bombardment was a component in therapy 0% of the targets generalized.

There have been limited studies pertaining to the use of auditory bombardment in intervention even though according to Sharynne Mcleod & Elise Baker's study it is one of the 8 most commonly used approaches for children with SSD. Also the limited number of studies present are done only on children, and the studies related to efficacy of this approach on adult population is very limited, if not none. Especially, the efficacy of Auditory Bombardment on persons with aphasia, as a viable therapeutic approach had not been examined. Thus this study aimed at documenting the efficacy of vocabulary bombardment in an individual with Expressive Aphasia.

Case study:

A 45yr old male who had a medical history of Left Middle Cerebral Artery Infarct participated in the study. During the initial assessment Oral Peripheral Mechanism Examination was carried out which revealed that the lips was deviated towards left, with the range and speed of motion of labial and lingual structures were restricted and labial and lingual strength being weak. Intraoral pressure were also reduced. Informal assessment of language were carried out which revealed good. Auditory comprehension were the client was able to understand auditory commands without any cues. The client was able to speak in one word utterance with phonemic and semantic cues and had limited or restricted vocabulary. The client had difficulty in recollecting words during spontaneous speech. The client's naming function and repetition was observed to be impaired. The client was administered with Western Aphasia Battery (WAB), which revealed Broca's aphasia.

MANAGEMENT:

The client had been enrolled in speech and language intervention for 8 months, following which the client was able to communicate in sentences consistently, however identical sentence pattern was predominantly used. The client exhibited difficulty in tasks involving generative naming, which prompted us to use the vocabulary bombardment as a technique to improve his expressive vocabulary.

GOALS:

Apart from the traditional therapy sessions, the ninth month intervention focused on improving the expressive vocabulary and generative naming using vocabulary bombardment.

The therapy was planned using a material named Longman Exam Activator which is a classroom and self-study exam preparation (Teacher's Book) material by Dominika Chandler which had vocabulary test as one of the tests. The material had two main subdivisions (i) Vocabulary test (ii) Grammatical test. The vocabulary test sub division was used for the purpose of this study. The vocabulary sub-division has 12 subtests under it, with each of the sub-test being specific to a certain category. Each sub-test would have a total score of 20. For example, the tasks in the first sub-test was related to *People, Family & Social life*. The second sub-test was related to *Home, ie.*, the task had words related to 'Home'. The third sub-test was based on words related to *School etc (Table 1)*.

Table 1: Subtests under Vocabulary Test

SUBTEST	CATEGORY
Test - 1	People, family and social life
Test - 2	Home
Test - 3	School
Test - 4	Work
Test - 5	Food
Test - 6	Shopping and services
Test - 7	Travelling and tourism
Test - 8	Culture and free time
Test - 9	Sport
Test - 10	Health
Test - 11	Nature and environment
Test - 12	Science and technology

The data collection was done in three phases. Pre-Intervention, 2 weeks Post Intervention and 4 Weeks post Intervention. The vocabulary test was used during all three phases to document the scores. The test was initially administered to assess the client's initial performance, and this score was taken as the baseline score. The words under each test were recorded separately using voice recorder and were saved separately to be presented for the Vocabulary Bombardment task. The sessions were carried out through online platform. The sessions were conducted every day for a duration of one month. Each day the session was conducted during the late evenings before sleep and 2 sessions were conducted consecutively on the same day. For the first part of the session, each vocabulary sub-test were presented separately. The recording of the first sub-test would be presented and the client will be asked to recollect the maximum number of words from the sub-test. An average of around 32 words were presented per recording. Once the client has repeated the maximum number of words that he could recollect from the sub-test, the clinician then presents the next sub-test, and the same format was carried out for all the 12 subtests. The number of words recalled were documented each day. For the second part of the session, recordings of all the sub-tests were presented together without breaks in-between them.

The follow-up assessments were carried out at two timelines, once at the end of second week of the session, and once at end of the fourth week. The scores of both the follow- up assessments were documented for comparison and to check the prognosis.

SUB TESTS	PRE	POST THERAPY	POST THERAPY
	THERAPY	SCORE AFTER 2	SCORE AFTER 4
	SCORE	WEEKS	WEEKS
TEST 1	7/20	10/20	16/20
TEST 2	3/20	8/20	13/20
TEST 3	1/20	7/20	12/20
TEST 4	7/20	10/20	16/20
TEST 5	8/20	12/20	18/20
TEST 6	3/20	7/20	13/20
TEST 7	7/20	10/20	14/20
TEST 8	1/20	2/10	5/20
TEST 9	6/20	10/20	13/20
TEST 10	3/20	5/20	8/20
TEST 11	3/20	10/20	17/20
TEST 12	2/20	6/20	12/20

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Figure 1: shows the graphical representation of comparison of scores which have been obtained before, during and after the intervention.

The pre-therapy scores are the baseline scores, where they were obtained before providing the client with auditory bombardment therapy. The post-therapy scores are of the scores obtained after two weeks and four weeks of auditory bombardment therapy. Comparing the pre-therapy and post-therapy scores, it is noticeable that there is a significant difference between the pre-therapy and post-therapy scores, i.e., the difference between the baseline assessment and after the auditory bombardment therapy.

There is a significant difference in scores between the two time lines of assessments, but in few subtests the significant difference is slightly less comparatively, and also the absolute scores are reduced on both assessments. This can be attributed to the fact that the words that were present in these sub-tests were used more widely in the western countries, while it is used in a much lesser frequency and less wide here observed to be less pre and post therapeutically. The lack of significant difference between the prognosis in verbs and prepositions can be attributed to the fact that according to the natural partitions hypothesis, the noun class has the privilege of naming the highly cohesive bits of the world, whereas verbs and prepositions have the job of partitioning the leftovers-a diffuse set of largely relational components (Gentner, 1981, 1982; Gentner & Boroditsky, 2001).

CONCLUSION:

Vocabulary bombardment is an effective therapy procedure which is predominantly used in the management of speech sound disorders, where the client is provided with amplified, repeated set of words. While this therapy procedure is not widely used for individuals with aphasia, it proves to be an effective intervention program which has proven to enhance the word retrieval abilities in a client with Broca's aphasia. During the course of therapy, the client was also observed to use the words from the vocabulary bombardment word list in his day to day conversations, which were previously absent in his repertoire. Hence this evidences for an increase in vocabulary skills after the intervention. Future directions of the study will focus on a larger population with different types of aphasia. Future directions will focus on documenting the efficacy on a larger population and generalization of the words in vocabulary bombardment list across various context.

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