The Effects of Semantic Association Task by Drawing in a Korean Bilingual Aphasic: A Case Study

Ok-Bun Lee* · Ok-Ran Jeong*

ABSTRACT

The purpose of this study was to determine the effects of associative drawing task in a Korean bilingual aphasic. The subject is a 41-year old male and lived and was educated in the United States for over 25 years(from the age of 14 through 39). His former occupation was a psychiatrist. He has had a massive lesion in the occipital lobe. This study focused on improving his spontaneous language performances by associative drawing task. The associative drawing task along with spontaneous speech is to help the subject's cognition. The ten target words in this treatment were familiar words and could be drawn easily. The results were that the associative drawing task was effective on improving the patient's drawing ability-writing ability in English only-and naming performance both in English and Korean. However, the patient's writing ability in Korean did not show any improvement.

Keywords: Semantic, Associative, Bilingual, Cognition

1. Introduction

Multicultural and multilingual issues have been frequently mentioned in the field of speech-language pathology over the past several decades.

According to de Bot (1992), the majority of the world's population is bilingual (recited in Patricia, 1998). The U.S. Bureau of the Census (1990) reported a minimum of 25 million people in the U.S. are bilingual (www.asha.ucf.edu).

Prior to 1990, bilingual aphasia is rarely considered in many researches and textbooks, and cultural issues (Chapey, 2001).

Especially, speech pathology in Korea is an undeveloped area and research regarding bilingual aphasia has been extremely limited.

The word "bilingual" has different meanings for different people (Chapey, 2001). And bilingual is multidimensional issues (Patricia, 1998; Chapey 2001). Some studies explained that bilingual subjects can speak two language fluently. The bilingual person's "powerful"

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language may be the language spoken in home, but he (she) want to communicate about certain topics, events, professional issues. This indicate that language preference of the bilingual aphasics is a important variable to facilitate language performance in clinical settings.

Many variables have considered on language performance of the monolingual aphasic, however, those may not be positive in a bilingual aphasic. Fabbro (1998) claimed that drawing exercises is useful, albeit rather simplistic. Helm-Estabrooks and Albert (1991) also pointed out that the "back to the drawing board" program was to encourage aphasic individuals who were severely impaired in verbal expression to communicate feelings, needs, and events through drawing. In addition, Lim (2002) explained that the line drawing task was effective on language performance of a global aphasic. Although the drawing tasks of those were effective on monolingual aphasic, there haven't been any attempt to prove the effectiveness on bilingual aphasics. So, it is important to avoid a confusion in speaking between two languages that the meaning of drawings stimulate strongly the related language function in the brain instead of written words and verbal stimulus. Arturo and Elizabeth (www.psych.ucsb.edu) reported that naming pictures in first and second language resulted in activation of the same area in the brain when observation via PET. They also explained semantic judgement of words and semantic task activate mostly overlapping areas of the brain in the bilingual subjects. Judy et al. (1999) reported that the semantic activation for both languages occurred in the same cortical locations.

As shown above, this study of bilingual aphasia is valuable in the field of speech pathology. In addition, we expect that the study can contribute to our understandings and inverventions for monolingual aphasia as well as bilingual aphasia.

The research questions to be answered was if a semantic associative task by drawing was effective on a bilingual aphasic's drawing ability, naming ability in English and Korean, and writing ability in English and Korean.

2. Subject

The patient was a 41-year old right-handed Korean male, and has lived and educated in the United States for over 25 years (from the age of 14 through 39). His former occupation was a psychiatrist. He diagnosed with MELAS, a mitochondrial cytopathy. The MELAS syndrome ("Mitochondrial Encephalomyophaty, Lactic Acidosis and Stroke-like episodes") acquired its name in 1984, when it became the second mithochodrial cytopathy to be identified as a distinct clinical entity (Pavlakis et al., 1984). The symptoms appear when some form of biological stress causes an energy deficit, when the

output of the genetically weakened mitochondria is no longer sufficient to meet the heightened energy demands (Maria & Bruce, 2001). He has been treated with medications at the time of experiment. Due to the MELAS syndrome, he suffered from a stroke three times. He has had a massive lesion in the occipital lobe (see Figure 1). He frequently showed a sign of "code switching" both in clinical and at home. In other words, when the clinician asked in Korean, he answered in English. He used to speak in English at work and at home premorbidly. At the diagnostic test, he performed better in naming and speaking in English. His auditory comprehension was poor. He showed severe phonemic paraphasias during a repetition test. In spontaneous conversation, he exhibited severe word-finding problems. He also showed severe anomia on K-BNT (Korean Boston Naming Test) and BNT (Boston Naming Test).

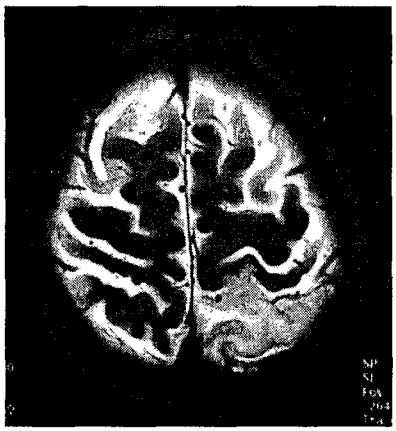


Figure 1. The subject's brain lesion in the occipital lobe

3. Methods

3.1 Assessment

For assessment of a subject's naming ability in English and Korean, BNT (Goodglass et al., 1983) and K-BNT (Kim & Na, 1997) were used. The naming test was administered 4 times: Pre-treatment, 2 times during treatment, post-treatment (See Table 1). The subject's language comprehension and expression ability in Korean were assessed using the Taegu Aphasia Examination (Jeong, 1994). In addition, the English version of the Taegu Aphasia Examination was used in assessing of his receptive language and expressive in English. These examinations were administered 4 times, as in the naming test. The results were shown in the table 1.

Table 1. The subject's naming test

	Pre-treatment	Treatment I	Treatment II	Post-treatment
BNT(60)	7	8	11	13
K-BNT(60)	4	7	9	9

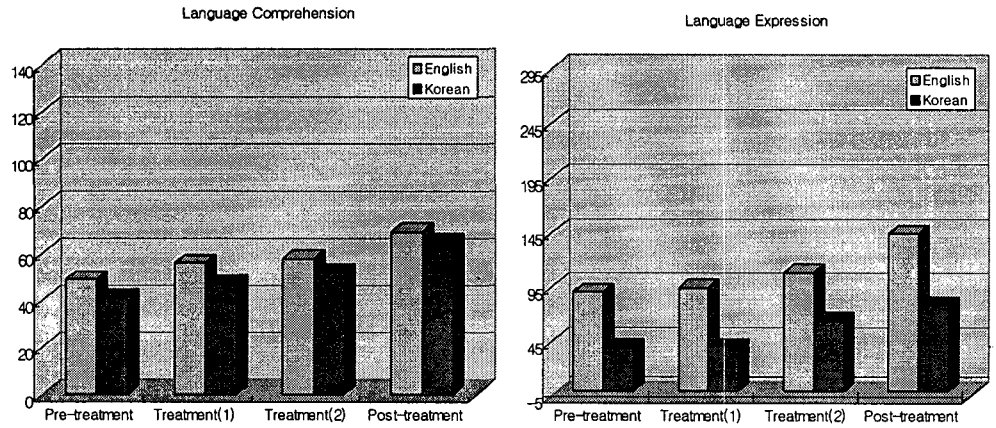


Figure 2. The results of Taegu Aphasia Examination

3.2 Treatment stimuli

Ten target words consisted of familiar concrete nouns which could be drawn easily. These words were used to investigate the effects of a semantic association task by drawing, in which the patient produced any spontaneous speech associated with the target words. The 10 target words included umbrella, glasses, watch, tree, pencil, cup, hammer, scissors, spoon, and hand. For instance, with the target word 'umbrella', the clinician showed a picture card depicting a rainfall and verbally asked "What do you need when it rains?", "Please draw a picture what you need." Then the patient was supposed to draw an umbrella. A real object (umbrella) was also shown in order to give him a tactile stimulation. In other words, an umbrella was put on the desk and the patient was asked to touch it.

3.3 Treatment Procedure.

In the treatment session, the clinician and patient were communicated mainly in English, since he showed better expressive language in English at the diagnostic session. The clinician used drawing task in the treatment. Because the subject showed a severe paraphasia when he had to name the target words looking at word cards. But the paraphasia decreased with picture cards or drawing. The treatment focused on improving his spontaneous language performances while performing a associative drawing task. The

goal of semantic association by drawing task along with spontaneous speech was to enhance subject's cognitive skills. The clinician guide him to draw object, to think the meaning and name of the objects, and then to say them. The drawing task was a simple cue to facilitate his language and cognition.

The schematic of treatment procedures was shown in the figure 3.

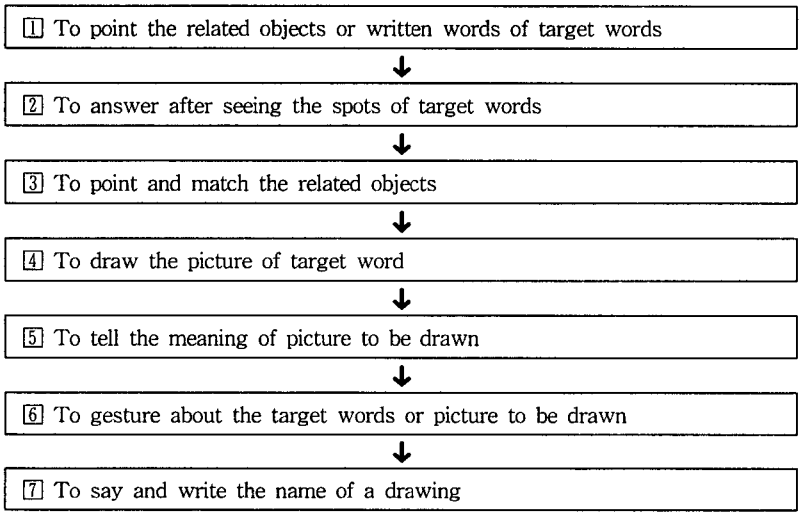


Figure 3. Schematic procedures of a semantic association task by drawing

4. Results

4.1 Drawing ability

The subject's drawing was improved after treatment, as shown in Figure 4. His drawing appeared to be more specific and detailed as the treatment session went by (see Figure 5).

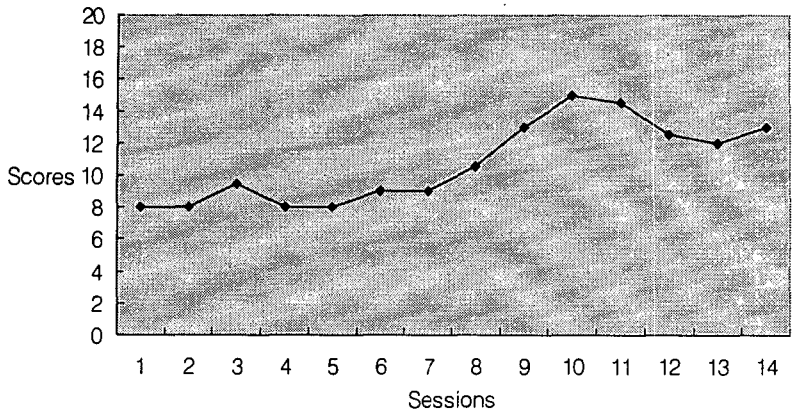
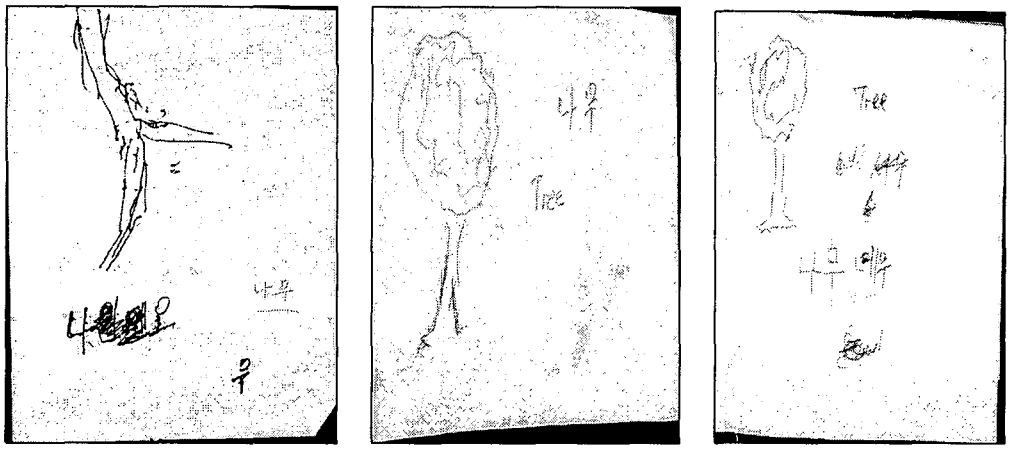


Figure 4. The subject's drawing ability



a. Pre-treatment ➡ b. During treatment ➡ c. Post-treatment

Figure 5. The subject's drawings

4.2 Naming ability

As shown in Figure 6, his naming ability was improved both in English and Korean. In addition, his response latency was shortened. The clinician mostly used English verbal stimulus in the naming task. The effect of English naming performance was generalized into Korean.

The generalization effect into second language has been reported in Watamori and Sasamura's study (1976). This study reported that an oral language production of a English and untreated language after therapy.

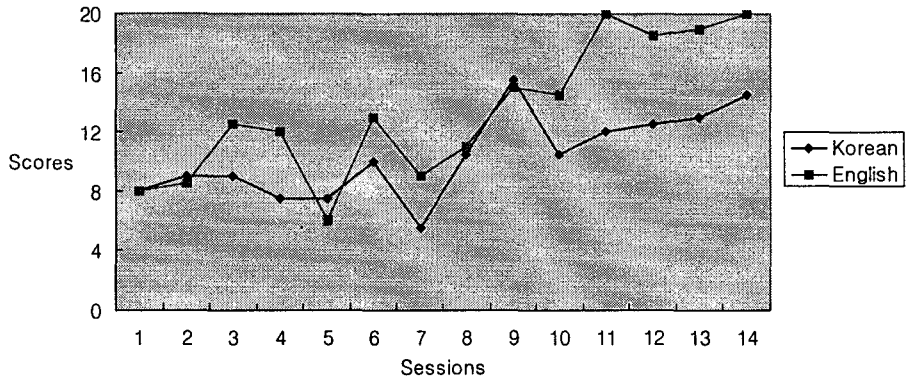


Figure 6. The subject's naming ability

4.3 Writing ability

Figure 7 showed that the subject's writing ability was greatly improved in English. However, the improvement did not occur in Korean.

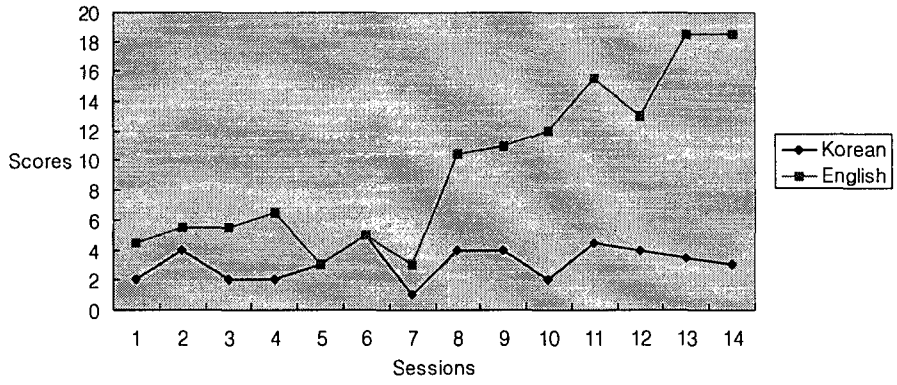


Figure 7. The subject's writing ability

5. Discussion

As shown above, the semantic association task by drawing was effective on language performance of a bilingual aphasic. The subject's drawing have become more detailed and realistic as the treatment proceeded. It may have attributed to the patient's right hemisphere function. The recent data on cerebral lateralization showed that bilinguals might well have greater right-hemisphere participation in language processing than monolinguals (Teodor, www.matshuishi-lab.org/bilinguism-htm). In addition, the right-hemisphere plays an important role in recognizing drawings.

Futhermore, the patient's naming performance was improved both in English and Korean even though the treatment did not include naming tasks. The patient showed inferior performance when he was to repeat or name words. Namely, he manifested hesitation, paraphasia, and stuttering rather than producing correct response. However, his verbal response was more accurate and easily produced when he was shown pictures and was to draw things and spontaneously questioned. In addition, Paradis (1977) reported that a synergistic pattern of recovery in one language is accompanied by progress in another (recited in Nini, 1999). Interestingly, the magnitude of progress in drawing appeared to be proportionate to that of naming skills both in treated (English) and untreated (Korean) language. However, this generalization effect has to be interpreted with caution because every bilingual aphasics can be distinctive.

In contrast, the writing performance in English was improved while that in Korean was not. It may be attributed to phonological confusion between English and Korean. The reason can be found partially in Hyltenstam and Obler (1989)'s study. They reported that lesions in posterior occipito-parietal cortical areas were associated with greater impairment in reading and/or writing of scripts with ideographic or irregular phonetic bases (recited in Nini, 1999). Moreover, the phonological system of the 2 languages are greatly different.

In conclusion, the subject's naming performance and verbal expression were greatly improved. However, he still showed a code-switching both in English and Korean in daily living situations. As Munoz et. al. (1999) advocated, he still tended to use both languages, easily produced language depending on communication episodes or situations.

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