The Application of the Bodysonic System to L2 Learning

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Abstract

The Bodysonic system was invented on the basis of "Bone Conduction Theory," which states that people feel sounds with their whole body. The Bodysonic system is used for L2 (English) learning at Aichi Women's Junior College. In recent years we have developed some unique methodology related to use of the Bodysonic system.

In Japan it is difficult for adult L2 learners to acquire the prosody of a foreign language. A language laboratory using the Bodysonic system has been suggested as one way to eradicate such adult L2 problems. The Bodysonic system changes sounds into vibrations. It makes it easy for learners to acquire the prosody of a foreign language because humans can convey information through their tactile organs. In addition, this system was originally designed to make people relax, so it can also help minimize learner anxiety.

The effect of Bodysonic vibrations on language learning has already been proven by some experiments. The Bodysonic system appears to be an ideal teaching method for adult to learn a foreign language.

0. Introduction

In this paper, I will introduce the Bodysonic system, and explain what it is like and what it is used for. Then, I will discuss some studies on the background of this research because they are essential to understanding my research. I then explain the reason why the Bodysonic system is applied to language learning, and show its effects. Finally, I examine the role and purpose of this research to provide further understanding.

1.Introduction to the Bodysonic System

Human beings perceive sounds in two ways: (1) through the ears, when air waves cause eardrums to vibrate, and (2) through the bones, whereby sounds are conducted through bones and are perceived somatically. Komastu invented the Bodysonic system on the basis of "Bone

Conduction Theory," which argues that human beings receive sound information through both ears and the body. The replay of recorded sound lacks information strong enough to appeal to the body. Therefore, Komatsu invented an appliance to amplify sound vibration. The Bodysonic system is useful to create natural sound with vibrations, which appeals to our body. This acoustic equipment transforms a low compass of sound into vibrations with a transducer. It has brought about a drastic change in the concept of sound use.

Presently, the Bodysonic system is mainly used for three purposes: relaxation, entertainment and communication. It is used in medical institutions, sports clubs, hotels and esthetic saloons for relaxation purposes, and in discos, karaoke studios, movie theaters, expositions and showrooms for entertainment purposes. It is used in educational institutions in school and college language laboratories and in kindergarten playrooms for communication. In addition, many researchers are studying the effectiveness of medical treatments which combine music therapy and the Bodysonic system in mental care, terminal care, operations, artificial dialyses and dental treatment. Communicative use in educational institutions has not been popular yet. The Bodysonic system was first used in the Language Laboratory was done at Hinomoto Gakuen Junior College (HGJC) in Hyogo Prefecture, followed by Aichi Women's Junior College (AWJC) in Aichi Prefecture. In recent years, HGJC & AWJC have cooperated in developing this unique methodology.

2. The Background Study of the Bodysonic System

2.1 Bone Conduction Theory

Playing a musical instrument, we receive the reactive sound from our active playing and control its pitch, strength, and tone. These reactive elements involve not only sound. For example, horn instrument vibrations are transmitted through the lips and jaws, and string instrument vibrations are conducted through both the body of the instrument and the bow. Moreover, a percussion instrument produces bigger reactive vibrations through the body and the hands. These reactions produced by sounds are very important in playing instruments. Without the feedback from these reactions, players have difficulty to playing correctly and feel very frustrated.

From the foregoing, we can see that music contains both physical and physiological elements. They are called " impure elements of music", some of which cause intoxication even ecstasy in us. Hideo Itogawa calls these phenomena Bone Conduction Theory.

2.2 Tsunoda's Study on the Japanese Brain

Tsunoda (1985) points out that the Japanese brain is different from that of Americans because of a difference in native language. In Japanese, the cognitive system tends to process both vowels and consonants in the left hemisphere of the brain, whereas Americans process vowels in the right hemisphere and consonants in the left hemisphere. Therefore, the English language depends more on right brain cognition than the Japanese language does. (See Figure1.)

Figure1 shows that it is essential to stimulate the right brain when a Japanese learner tries to acquire English. In humans, the right hemisphere of the brain develops faster than the left hemisphere initially, gradually slowing down from age 8 to10. After this developmental period finishes, it is difficult for adults to construct a new perceptive mechanism, especially for right-brain-typed information. However, the Bodysonic system may provide a powerful stimulus for the construction of a new brain mechanism.

Tsunoda presents the fact that an imbalance in the brain states impedes learning activities. The language faculty is located in the left hemisphere of the brain, so the load on left brain activities is much heavier than that on the right. But music sounds are processed in the right hemisphere. Therefore, music helps the learner to keep a balance between both sides of the brain. However, songs are not helpful for language acquisition under some circumstances, because song lyric words will stimulate the left-brain.

2.3 Kobayashi's Study on the Auditory Response of Embryos and Fetuses

Kobayashi(1990) reports that the auditory responses of embryos and fetuses observed by pulse and body movement measurements are poor until about 6 months, but improve gradually, with some 7 to 8 months old fetuses showing a pulse rate response, and all 9-month fetuses showing a response. Music accompanied by Bodysonic vibrations caused 85% of 4-5 month fetuses to show auditory responses. This indicates that sounds which fetuses cannot perceive from sound alone become perceptible with the Bodysonic system. Hence it is possible to develop fetal abilities which are usually undeveloped at this stage. Related to the paleocortex of a brain, vibration perception develops very early. Therefore, brain functions can be developed earlier than normal if stimuli are sent with the Bodysonic system.

2.4 Masuda's Research

Masuda(1988), the originator of the language laboratory with the Bodysonic system, used the Verbo-Tonal System as the theoretical background for this learning method. He regarded Japanese learners as handicapped in terms of not having the native foreign language phonetic cognitive structure. He felt it was important to expose the Japanese foreign language learner to a foreign language using a rehabilitation approach similar to the method used for auditory handicapped people. Therefore, he designed a method to convey information through the tactile organs and adopted the Bodysonic system. Masuda named the language laboratory using Bodysonics the Rhythm Education System.

Masuda lists the following possible effects of using the Rhythm Education System:

(1) correct cognition of rhythm and intonation,

(2) accumulation of knowledge through the somatic perception of the language sound,

(3) Building the physiological and physical readiness for the oral production of the target language,

(4) improved hearing ability through listening to filtered sound,

(5) increased target language prosody and better memorization, and

(6) an environment which relaxes learners and makes alpha brain waves emerge easily.

Most of these effects have been confirmed by Masuda and other researchers. The experiments concerning (1) and (6) were conducted by Suzuki (1998a) and Suzuki (1998b).

2.5 Suzuki's Study on the Conscious and the Subconscious Learning

Suzuki's study (1990 & 1991) pointed out the role of conscious and subconscious learning in L2 acquisition. L1 acquisition is a genetically determined mechanism of human beings. Almost everyone can acquire L1 in about the same length of time and there are few remarkable differences in the language (L1) competence we have. However, in the case of L2 acquisition, remarkable differences are found among individuals. L2 acquisition is not the same as L1 acquisition, the latter of which depends on subconscious learning for the most part. Therefore, the key differences among the individuals learning L1 and L2 consist in the time required to learn and the level of acquired ability.

Up to now the left hemisphere of the brain has been considered to be superior to the right hemisphere in the language acquisition mechanism and functions, so little attention has been

paid to the right hemisphere. However, studies of developmental psychology and aphasiology indicate differences in the development and function of each hemisphere. The development of the right hemisphere precedes that of the left. The right hemisphere functions more actively than the left until the age of 5 or 6 and also plays an important role in L1 acquisition. Therefore, if we seek to duplicate native-like L2 learning conditions, emphasis should also be put on subconscious learning when adult learners begin L2 acquisition. However, considering the dualistic nature of language, acquisition through only subconscious learning is not sufficient for adult learners. This dualism in language is attributed to the different mechanisms and functions of the two hemispheres of the brain. For example, I contend that L2 communicative skills can also be acquired subconsciously. On the other hand, everyone agree that metalinguistic skills are best learned consciously. Therefore, I believe that it is necessary and beneficial to present subconscious as well as conscious approaches to L2 learners.

3. Reasons Why the Bodysonic System is Helpful for Language Learning

The reasons why the Bodysonic system helps foreign language learning are as follows:

(1) The Japanese English learning style emphasizes the form of the English language, which constitutes left brain or analysis-based studying. However, the Bodysonic system integrates right brain learning with that of the left, thereby promoting integral studying.

(2) The study of alpha brain waves by Shiga (1987) shows that alpha brain waves are observed when subjects concentrate on doing something. Alpha brain waves are also observed when subjects are relaxed. Therefore, alpha brain waves can be used as a scale representing a learner's state of concentration or relaxation.

(3) Subconscious learning is stimulated by the Bodysonic system as reported by Kobayashi(1990). Kobayashi undertook experiments on the embryo and fetuses and concluded that the Bodysonic system enhances the perception of vibrations during early fetal development, which by definition is subconscious learning. Hence it can be argued that the Bodysonic system may also help adult language learners study L2 subconsciously.

(4) The Bodysonic system produces vibrations which appeal somatically to humans. Thereby providing a source of information which supplements standard auditory and visual cues and improves a learner's chance to acquire the prosody of a target language.

4. Bodysonic System Effects

The effects of using the Bodysonic system in the language laboratory are thought to be as follows:

(1) improved learner aural and oral abilities,

(2) provision of relaxed learning situations, and,

(3) increased learner motivation to acquire the target language.

Ongoing research is being conducted to verify these effects.

5. Exposition of the Roles and the Purposes of the Research

In Japan it is difficult for adult L2 learners to acquire the prosody of a foreign language for three reasons:

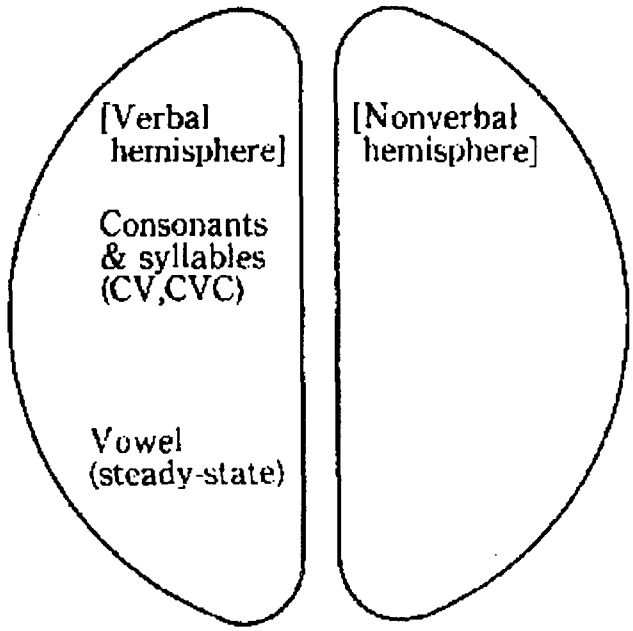
(1) the language environment is also Japanese, and a short period of exposure to the target language doesn't give these learners sufficient chances to acquire prosodic features,

(2) starting to learn L2 after their critical period of language acquisition is over, these learners have already lost the flexibility to easily acquire the new sounds and rhythm of the target language,

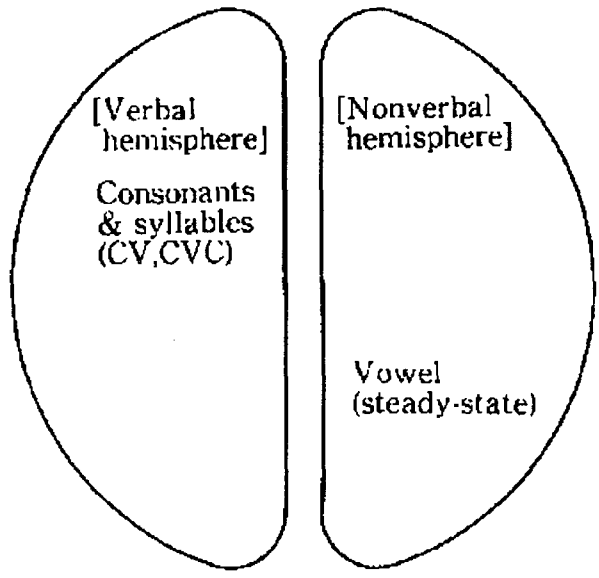
(3) L2 (English) in the Japanese educational curriculum focuses on reading and grammatical knowledge for future exam testing, as opposed to oral communication, which is not tested.

Japanese adult L2 English learners face these problems, along with the feeling they are not good at oral communication, which in turn causes them to hesitate to speak in the target language. They are gradually losing self-confidence and getting tired of studying. Building self-confidence in class is an important part of teaching these kinds of learners, as is creating a relaxed and optimal L2 learning environment. As discussed herein, the Bodysonic system is ideally suited to helping these aspects of the L2 acquisition process, espcially by supporting subconscious L2 learning, so I hope this research will benefit those who are struggling with L2 learning and their teachers.

The major difference between the Japanese and Western patterns lies in vowel laterality. The Japanese brain processes vowels as a verbal sound in the left hemisphere, but the Western brain processes them as a nonverbal sound in the right hemisphere. (Tsunoda, 1985: p.45)



JAPANESE PATTERN



WESTERN PATTERN

<Figure 1> Japanese and Non-Japanese Dominance Patterns for Verbal and Nonverbal Sounds

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