The Effects of Neurofeedback Training on Visual Long-Term Memory

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論 文 名　：The Effects of Neurofeedback Training on Visual Long-Term Memory
　　　　　　（視覚の長期記憶に関するニューロフィードバック訓練法の効果）

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論 文 内 容 の 要 旨

Long-term memory has always been one of the most important cognitive activities in our lives. However, there were few studies on the improvement of adults' long-term memory ability. In this study, we want to know whether our electroencephalography neurofeedback training can improve the theta oscillation and their long-term memory or not.

In this study, all participants were randomly divided into two groups: a neurofeedback group and a control group. The difference between the two groups was whether they participated in neurofeedback training or not. We let participants take part in different memory tasks before and after neurofeedback training, which can measure their episodic memory, semantic memory, and working memory. In particular, the measurement time of episodic memory and semantic memory was as long as one week, so we could clearly see the memory changes of participants one day, two days, and seven days later. The experiment took three weeks. In the first and third weeks, we measured the memory ability of the participants. In the second week, only the neurofeedback group participated in the neurofeedback training. We compared the changes in the memory ability of the participants in the first and third weeks.

The results showed that our neurofeedback training can indeed enable participants to effectively improve theta oscillation. Participants' increased theta oscillation also affects their performance in one-week long-term memory. We also found that the brain activities of the two groups were different in different memory tasks. Our experiments demonstrated that

a part of long-term memory abilities of adults could be improved by our neurofeedback training. As for longer-term memory more than one week and other kinds of tasks, there is room for verification in the future works.