

On the effects of Rap music with encouraging lyrics on autonomic nerves and moods in college students

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Abstract This study examined how rap music with encouraging lyrics affected the autonomic nerves and mood of 32 college students. Participants listened to three conditions of music while wearing an electrocardiogram (ECG), and completed two scales. The analysis results revealed that the main effect was on the motivation of the participants.

Objective This study examined how rap music with encouraging lyrics affects the autonomic nerves and mood of 32 college students. In previous studies, it could not be determined whether the cause of mood induction and motivation is caused by the music as a whole or as the effect of only the instruments on the same song. In particular, very few studies have measured subjective evaluations and physiological indices simultaneously.

Method

Participants. The participants were 32 college students from Japan (15 females, 17 males, mean age: 21 years).

Measure. (1) A scale on the effect of music on mood with 11-point Likert scale. (e.g., “I feel positive.” “I was encouraged.” “I feel relaxed.” “I feel pain.” “I am sad.”), (2) (TDMS-ST) Two-dimensional Mood Scale-Short Term, (3) electrocardiogram (ECG). Emotional responsiveness biomarkers were assessed using high frequency heart rate variability (HF HRV) data and sympathetic vagal balance (LF / HF) calculations using ECG data.

Material. Rap music of AK-69 which was played with and without lyrics (instrumental music), and without the instruments.

Procedure. Participants were asked to relax for four minutes while their ECG was measured as baseline. They then listened to music for four minutes (with a condition randomly selected from the three conditions described above), completed 2 scales, and relaxed for four minutes. This procedure was repeated three times.

Result. Results of one-way ANOVA on the 2 scales on the effect of music on mood showed that there were important effects on motivation. Results of analyses showed that motivation was higher on music with lyrics ($p < .05$).

As a result of a Wilcoxon signed rank sum test in the amount of change of HF and LF / HF from resting to listening to music, the score average without lyrics was significantly higher in HF ($p < .05$). The score average with lyrics was significantly higher in LH / HF ($p < .05$).

Discussion. Analyses of each item showed significant differences in the “I feel positive” and “I was encouraged” items of the scale on the effect of music on mood. Results of TDMS-ST showing significant differences suggested that music with lyrics affected the motivation of college students the most. A significant difference in the effect of music on the mood item “I feel relaxed” and the “I feel relaxed” item in TDMS-ST suggested instrumental music had a relaxing impact. The analysis of each parameter of heart rate variability, that is LF/HF, revealed that sympathetic nerves were more activated with lyrics than without. On the other hand, HF, parasympathetic nerve activity that is, was confirmed to be significantly more activated without lyrics than with them.

From these results, we conclude that music with encouraging lyrics increases motivation and arousal of university students. In addition, instrumental versions of the same songs were confirmed to have a relaxing and soothing effect on university students. Future investigations will examine and compare the influence of self-selected songs, sports scenes, and other ages of participants.

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