

Experiment of long-term continuous effect of alerting for correction of bad driving habit

Tomokatsu Okuya¹⁾ Nobuhiro Mizuno¹⁾ Akira Yoshizawa¹⁾

1) DENSO IT LABORATORY, INC. 2-15-1 Shibuya Cross Tower 28floor Shibuya Shibuya-ku Tokyo 150-0002 Japan

KEY WORDS (Standardized) Human Engineering, Driving Act/Driver Behavior, Driving Characteristics
(Free) Operant Conditioning Reinforcement Learning, Transtheoretical Model [C2]

Veteran drivers can develop bad driving habits. Some drivers don't stop or check left and right at intersections where a stop is required. We're developing a system that corrects such dangerous habits and encourages drivers to behave safely. In this study, we built a system that provides an audio alert after the driver has crossed an intersection. The system rewards drivers for good driving behavior and reprimands them for bad driving behavior. Experiments showed that the driver's driving behavior was modified so that he continued to drive safely even when the system was used only once a week.

Using a driving simulator, 5 subjects were used to observe their driving behavior when stopping at an intersection. The course we developed and used for this experiment is shown in Fig. 1.

The experiment was conducted in the following order: First time → 6 months later → Another month later (1st week) → 1 week later (2nd week) → 1 week later (3rd week). A total of 5 experiments were conducted.

We observed the reappearance (forgetting) tendency of bad habits. The Fig. 2 is the DS running result of the first training (First time), and the DS running result of 6 months later and 1 month later (Another month later).

#1 to #5 are the crossing order. The red cell is a passing point where there was a bad habit of driving. We implemented a scolding speech synthesis announcement from the alert system. The blue cell is a passing point where there is no bad habit of driving and good habit of driving is performed. We implemented speech synthesis announcements for praising from the alert system. All subjects developed bad habits #1 6 months later and Another month later. From this result, it is considered that there is a tendency to reappear (forget) bad habits by neglecting training for one month.

We observed the maintenance/improvement trend of the corrective effect. The Fig. 3 is the result of training once a week for 3 weeks (1st week, 2nd week, 3rd week). Fewer and fewer subjects developed bad habits at Intersection #1 week after week. In addition, ID1642 began to have a good driving habit of checking the left and right eyes by bending forward. From this result, it is considered that there is a tendency to maintain and improve the corrective effect by continuing training once a week.



Fig. 1 DS driving course (orange line)



Fig. 2 Tendency to re-emerge bad habits

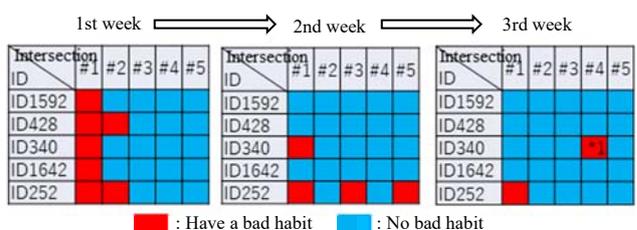


Fig. 3 Trends in maintaining/improving effects