Analysis of Heart Rate Fluctuations II
Yoshimitsu SHINAGAWA and Masaaki TANAKA

Since $1/f$ fluctuations have been found in the RR intervals of electrocardiograms (ECG), much research has been done on $1/f$ fluctuations in biological rhythms. In particular, how $1/f$ fluctuations of heart rate vary with diseases and aging has been studied. But, neither the generative mechanism nor the functional meaning of $1/f$ fluctuations have been elucidated. To elucidate the mechanism by which the heart rate variability shows $1/f$ fluctuations, we have been studying various factors which can generate $1/f$ fluctuations. We have already confirmed that $1/f$ fluctuations originated from fractal natures in biological organs. In this paper, a phase model is proposed which associates local fluctuations originating from the fractal structure with global fluctuations, such as heart rate variability. The model is simulated numerically. The phase model reflects the fractal structure of the nervous system. As a result, it is suggested that $1/f$ fluctuations of heart rate variability originate from the fractal nature of structures in the nervous system.

Development of a Rorschach Test System
Hidetoshi MORIHISA, Satoshi UEDA and Tadao FUJIWARA

The Rorschach test is a very general test used in psychoanalysis. It provides a good evaluation but requires some complicated calculations. We were asked by one of the mental hospitals to develop a support system which utilizes a personal computer to aid in the calculations. In preparing the system, we wrestled with an analysis of operations. The system that was devised can be operated by inexperienced personnel because it uses the GUI (Graphical User Interface), which makes operation very easy and practical. However, a part of the procedure is carried out manually, because the data used in the test is obtained by conventional methods.

Performance of Auditory Lexical Decision Tasks by Aphasics
Jun TANEMURA, Hiroshi FUJINO and Tsuneo HASEGAWA

The ability to perform auditory lexical decision task was investigated in 20 aphasics according to characteristics of words and types of aphasia. Also performances in visual lexical decision making with kana were compared to auditory lexical decision performances. The overall performance level in making auditory lexical decisions was high, and frequency of use of target words influenced the performance. Among aphasic types, Wernicke aphasics and transcortical sensory aphasics made errors in deciding nonwords versus words. Broca aphasics and Wernicke aphasics showed high correct response rates with words, but they showed low correct response rates with nonwords in auditory lexical decisions. In visual lexical decisions of kana words and

nonwords, their performance was opposite to those for auditory lexical decisions. It is thought that the phonological forms of words could not be recognized correctly in auditory processing, and nonwords were not discriminated from words.

Comprehension of Metaphor in Hearing-Impaired Children
Yutaka YOSHIOKA and Jun TANEMURA

This study was designed to investigate the comprehension of metaphor in hearing-impaired children. Subjects were 32 junior and high school students in the school for the deaf. The stimuli were 3 kinds of metaphor sentences, namely, idioms, perceptual metaphors and conceptual metaphor sentences. Comprehension was measured by multiple-choice tasks. Receptive vocabulary age was measured by Picture Vocabulary Test (PVT) using kana characters.

The major findings were as follows :

1) The correct response rate was the highest for idiom sentences, followed by perceptual metaphors and conceptual metaphors, which was significantly low.

2) There were no significant differences with regard to school year and hearing level.

3) There were significant differences between the children who had receptive vocabulary ages over 12 years old and those with receptive vocabulary ages under 12 years old. An 80% correct response rate was considered to be a good comprehension of metaphor.

4) Literal interpretation decreased in high school students.

From these results, the mechanism of metaphor comprehension in hearing-impaired children is discussed.

Classification and Discussion on the Law of Medical Care
Megumi ONO and Kazuhiko KIMURA

1. The concept of medical care includes not only treatment but also prevention and rehabilitation. Therefore, we will designate four functional classifications : regulation, prevention, environment and fundamental laws.

2. No difference in the amount of official support for desirable medical care between public hygiene and social service.

It is desirable to enact new fundamental law to bring together welfare and medical care.