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Clinical Application of Micro-Movement of Head by Vibraimage for Psychological Traits Study

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Abstract

The authors have conducted various research studies in medical care, anti-aging, psychosomatic medicine, health, and sports. The VibraImage project has recently begun. Using a 70-second video of the subject's eye, face, and head, the micro-movement and vibration parameters of frequency and amplitude are determined. The vestibulo-ocular reflex (VOR) is involved in the mechanism. These data can suggest mental attractiveness or charm. The obtained results include 10 items: aggression, stress, tension, suspicion, stability, leadership, vitality, self-control, inhibition, and nervousness. The most attractive person is referred to as a "charismatic" person, and the project is therefore named the "charisma judge evaluation.

Keywords

Vibraimage, Vestibulo-Ocular Reflex, Johari Window, Jugular-Ocular Reflex, Charisma Judge Evaluation

Abbreviations

VOR: Vestibulo-Ocular Reflex; JOR: Jugular-Ocular Reflex

Introduction

The authors have continued various types of research in a wide range of fields related to medical care, anti-aging, psychosomatic medicine, health, and sports. In the clinical and medical areas, several novel studies have been reported, such as macrophage-activating factor (MAF), 5-Aminolevulinic Acid Hydrochloride (5-ALA), and others [1]. In the field of anti-aging medicine, some cosmetic agents have been reported, including Nicotinamide Mononucleotide (NMN) [2].

In the areas of psychosomatic medicine, health, nutrition, and sports, we have developed cooperative research projects in Tokushima prefecture and with several companies [3]. Among such research topics, a project has recently begun in the fields of psychosomatic medicine, psychology, and wellness. The protocol includes the clinical use of the VibraImage method to examine the relationship between vibration parameters in the face image and people's psychological and emotional states. In this article, general information regarding this research will be briefly introduced.

Evaluation of Human Feeling:

The authors have recently initiated a series of basic and clinical research on VibraImage investigation. In this method, a motion picture (video) of the subject's eyes, face, and head is recorded for approximately 70 seconds [4]. From these data, the vibration parameters (frequency and amplitude) of each element (pixel) of the image are determined. This protocol can record very small or subtle micro-movements and minute spatial changes in the objects [5]. Previous research results have proven that each of these parameters reflects a person's emotions and physiological state, and can capture quantitative characteristics.

Human Movement and Vibration:

Living things on Earth include plants and animals. Basically, plants do not move, and the word "animal" has the connotation of "moving" in both Japanese and English. How has human behavior been explained? Looking back at history, psychodynamic theory and thermodynamic theory have been utilized, which were based on classical physical chemistry and the laws of thermodynamics [6].

What happens when humans move? Conversely, what happens when humans keep still? Although we usually sit quietly or try not to move, our body always keeps minute micromovements associated with frequency and amplitude. Traditional research methods have used the vestibular system and sensory physiology to study human head movements and minute vibrations. These micro-vibrations include the movements of the vestibulo-ocular reflex (VOR) [7,8]. Furthermore, some reflexes, including the jugular-ocular reflex, oculo-cardiac reflex, and carotid body reflex, may be involved in the instant function [9,10]. It is clinically important to contrast these micro-movements with the expression of vestibular reflexes, and these studies are progressing.

The VOR has been known as a reflex acting to stabilize gaze during head movement, associated with eye movement due to activation of the vestibular system. In people in a stable emotional state, head vibration parameters are present. Their frequency ranges from 0.1 to 10.0 Hz, and their amplitude ranges from 10 to 1000 micrometers, which provide stable data over the measurement time [11]. These oscillatory parameters change only when there are changes in emotional or psychosomatic states. As humans usually have such ordinary reflexes, we can apply some medical examinations related to these mechanisms. They include active head rotation testing, rotatory chair testing, vestibular tests, and so on.

Research Trial for VibraImage:

Our research group has continued basic and clinical experiments on human vibration. We have applied the novel equipment, VibraImage. The characteristics of VibraImage are summarized in **Table-1**.

Among these 8 items in **Table-1**, the 6th item reveals the evaluation related to the Johari Window [12]. It is a technique designed to help people better understand their relationship with themselves and others. It shows a visual representation of what you know about yourself, and also what others know about you, to help develop self-awareness and trust. In the VibraImage test, we take motion pictures of the eyes, face, and head of the subjects. At this time, no matter how much the person tries to adjust his or her facial expressions, the result obtained can hardly be changed. This is one of the characteristics of this evaluation method.

Table-1: Features of the VibraImage

1	Novel measuring method for character evaluation
2	Attractive discovery gear on cutting-edge science
3	Perform system image analysis without interviewing
4	A charismatic person has good right brain function
5	Analyzing 20% conscious and 80% unconscious
6	Unraveling the Johari window “unknown window”
7	Complete by sending/receiving data (non-contact)
8	Easy Applications from all over the world (24/365)

Sample Image of the Measurement:

The micro-vibrations of the human head are linked to the person's vestibular-emotional reflex (VER) [13]. Therefore, they reflect a person's emotional state at the time. The micro-vibrations cannot be discerned by the normal human eye. Due to recent ICT development, the information and image processing technology possessed by modern digital cameras, web cameras, television cameras, etc., has greatly improved. As a result, it has become possible to capture even the micro-vibrations.

By combining these technologies and processes, we collect 3D head and neck micro-movements in multiple video frames to detect changes in a person's emotions. A sample image is shown in **Fig-1**. The upper part of **Fig-1** shows the amplitude of VibraImage in a subject. The lower part of **Fig-1** shows the frequency of VibraImage in the head, face, and neck, and the yellow-green color area outside the person indicates the aura of external vibration that exists around the person.

Pilot Study of Charisma Appraisal Method:

More than 100 traits are measured using VibraImage and analysis. Among these, 10 items are selected that are closely related to the subject's psychological characteristics and charms. The items are aggression, stress, tension, suspicion, stability, charisma, vitality, self-control, inhibition, and nervousness. The chart is shown in **Fig-2**, in which the Japanese version is available, and the English version is pending. Each point for the 10 items has an optimal level. It is not preferable when the point is too high or too low.

The balance of the 10 items seems to indicate the person's charm. The most attractive person is called a "charismatic" person, so we call this project "charisma judgment" (charisma evaluation method).

2024年(令和6年)1月16日(火曜日)

心の魅力度 顔動画で判定

徳大開発「カリスマ鑑定団」

徳島大は人の心について、顔のわずかな振動やその周波数を分析することで、「健康」「情熱」「モテ度」など〝心の魅力度〟を判定するシステム「カリスマ鑑定団」を開発したと発表した。就活、婚活で自己診断に使えるほか、今後は医療分野への活用も目指す。(北野浩暉)

婚活、就活で検証 医療分野 活用目指す

Fig-1: Sample Image of Amplitude and Frequency in VibraImage

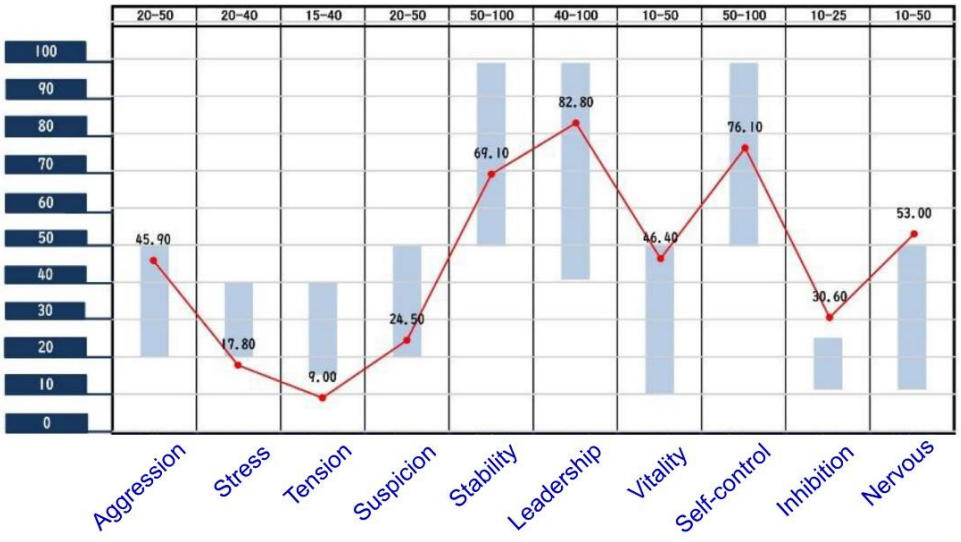

Fig-2: Ten Factors by Charisma Evaluation Method

In summary, the basic aspects of the VibraImage investigation were mainly presented in this article. This project has recently begun, and it is named the "charisma appraisal method" (charisma evaluation method). It is expected that the research will be developed in association with multiple disciplines for various areas.

Conflict of Interest

The authors have read and approved the final version of the manuscript. The authors have no conflicts of interest to declare.

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