

Evaluation of Emotions by non-contact swallowing measurement

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Swallowing movement is controlled by the reflex and the voluntary reaction of human body.

An easy and simple measurement for swallowing movement such as non-invasive and non-contact method is required for understanding human physiology and behaviors. We established a new non-invasive and non-contact method for the measurement of swallowing movement by the photometric stereo method. This method could achieve to chase the movement of throat thyroid cartilage quantitatively as an index of the swallowing movements. From the movement of throat thyroid cartilage, we calculated the total ingestion time, the frequency of swallowing and the autocorrelation coefficient of each swallowing as parameters of the swallowing movements. To understand the aversive responses, conc. sodium chloride solution (2% w/w) were used as a unpleasant stimuli. As a result of the analysis on the parameters, the amount of intake per each swallowing movement was decreased when taking sodium chloride solution, compared with when taking water. In addition the reaction of the swallowing movements was not periodically compared with water intake. On the other hand,

to understand the hedonic responses, we tested the measurement of the swallowing movements when subject feel thirst without drinking. As a result, the amount of intake per each swallowing movement was increased when subject feel thirst, while the reaction of the swallowing movements kept periodicity. It is suggested that the increase of intake per the swallowing movement without the decrease the autocorrelation coefficient will be a sign of the hedonic physiological response of the thirst.