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## **Poster**

### **184. Emotion I**

**Location:** Halls B-H

**Time:** Sunday, November 10, 2013, 8:00 AM - 12:00 PM

**Program#/Poster#:** 184.10/EEE13

**Topic:** F.01. Human Cognition and Behavior

**Title:** EEG alpha range dynamics for face and voice emotion in human brain

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**Abstract:** Introduction

In social cognition, judgment of emotion is important to communicate with another human. Human communication is based both on face and voice perception, therefore facial expression and tone of voice is important to understand emotions. In the scientific literature, there are several studies of cognitive responses to multimodal emotion stimuli. For example, people exposed to both face and voice, attend more face than voice [Sigeno S, 2004]. In incongruent studies, when subjects are induced to ignore another emotion, they direct significantly their attention to another emotion [de Gelder B & Vroomen J, 2000].

The purpose of this study is to establish multi-modal brain processing related to human emotions in EEG.

Method/Models

We used some photo of four Japanese actress. Six photos were used for each emotion: happy, neutral and angry faces. We used 3 word; ARIGATOU (Thank you), DOUZO (Here you are), SUMIMASEN (I am sorry). The voice of actresses was recorded, saying three words with a happy, neutral and angry tone. These recordings were then evaluated by a group of researchers to select the best representative of each emotions. Then audio-visual stimuli were composed using either congruent combinations of faces and voices (e.g. H x H) or non-congruent (e.g. A x H). On the other hand, incongruent stimuli may be a combination of happy face and angry voice, or a combination of angry face and happy voice. After the stimuli stop, subjects have three seconds to identify an emotion.

The response of the subject was recorded by pressing a keyboard: happy, neutral or angry. We recorded three blocks of data, for each condition (visual only, audio only, combined). The data was collected with a 64-channel Biosemi EEG system with active electrodes in a shielded room. Sampling rate was fixed at 1 kilohertz, notch filter at 50 Hz and analog bandpass filter between 0.5 and 100 Hz. The topographic distributions of EEG signals (relative power) was afterwards computed using the Welch periodogram method on the trials of the third session.

#### Results

We observed in the congruent condition strong activations in the prefrontal channels in the alpha ranges. We also observed a preference for the visual stimuli in the angry emotional judgment and a preference for the auditory stimuli in the happy emotional judgment. When comparing a congruent stimulus with a non-congruent stimulus with a visual difference (HxH vs. AxH or AxA vs. HxA), one can observe a distinct pattern: a longitudinal shift of power in the alpha range (increased in the frontal area, decreased in the occipital area).

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#### Poster

##### 184. Emotion I

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**Title:** Regional specialization of affective processing in the inferotemporal cortex

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**Abstract:** The human inferotemporal cortex (IT) appears to be topographically organized for the specialized processing of a variety of visual stimulus classes, such as color, faces, and houses. Regions of IT also show enhanced activation as a function of emotional arousal of visual stimuli, however the spatial specificity of emotion-enhanced IT signal, and its relationship to the hypothesized domain-specific regions of IT has not been explicitly investigated. Here we explore