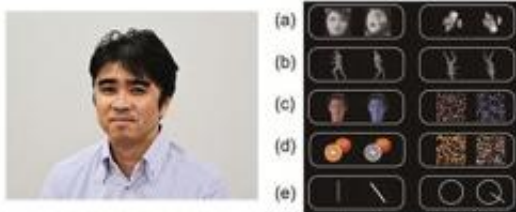


Oddball tasks and blue-colored humans

October 28 2010, By Adarsh Sandhu



Dr Minami and Fig.1: The ten pairs of stimuli used in this study. Copyright : Toyohashi University of Technology

Dr. Minami and colleagues at the Toyohashi University of Technology, Japan, investigated the P3 component using an oddball paradigm.

When humans see objects or hear noise created them, they not only perceive what they are but also implicitly endeavor to estimate their familiarity and naturalness to us. A positive ERP (event-related potential) component occurring 300–500 ms after the onset of a stimulus—known as P3—has been suggested to reflect various cognitive processes.

Here, Tetsuto Minami and colleagues at Electronics-Inspired Interdisciplinary Research Institute (EIIRIS) investigated the P3 component using an oddball paradigm. However, the typical oddball paradigm is inappropriate for examining stimulus familiarity and naturalness, because the difference in task difficulty and frequency between standard and target stimuli contaminates that of the stimulus

property itself.

Minami and colleagues focused on the relationship between stimulus pairs and their amplitudes during oddball tasks. The participants in the experiments performed two oddball tasks replacing the target stimulus with the standard stimulus. The researchers used pairs of natural and unnatural visual stimuli: a female face and an inverted face; a human pose and an impossible pose; a natural upright face and a bluish face; a natural orange and a gray orange (Fig. 1).

As a result, the naturalness of the target stimuli differentiated the P3 amplitude: the unnatural target enhanced the P3 amplitude rather than the natural one, and elicited P3 asymmetry (Fig. 2).

The asymmetry of the P3 amplitude during an oddball task might be useful as an evaluation index for [stimulus](#) features.

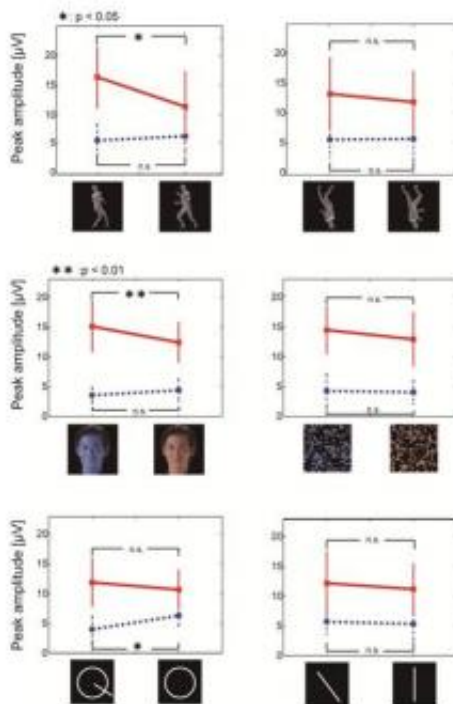


Figure 2: Peak amplitude at 380-500 ms for target-standard stimulus pairs.

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More information: *Neuroreport* 20 1471.
[DOI:10.1097/WNR.0b013e3283321cfb](https://doi.org/10.1097/WNR.0b013e3283321cfb)

Provided by Toyohashi University of Technology

Citation: Oddball tasks and blue-colored humans (2010, October 28) retrieved 18 April 2024
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