

The Embodiment Effect in Spatial Perspective-Taking

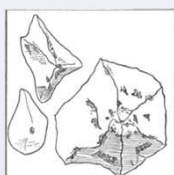
: Activation of Somatic Sensations Promotes Imaginary Body Movement

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AIM

Does the activation of somatic sensations urge the detachment of the representation of one's own body from his or her body (*imaginary body movement*) or conversely bar it in spatial perspective-taking?

Imaginary Body Movement
+
Other Cognitive Processing =



Procedures

30 healthy individuals aged 18 to 44 performed a video game task of spatial perspective-taking and a mental rotation task in the two conditions.

Activation of Somatic Sensations

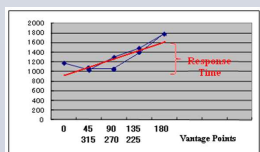
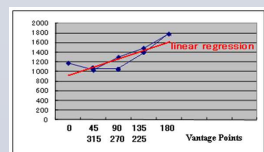
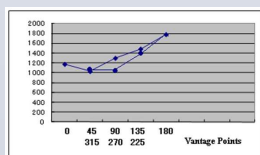
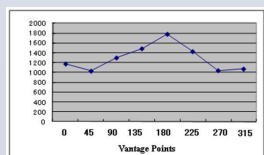


standing condition



sitting condition

Response times for each rotation angle were measured by the **video game controller** (XaviX PORT; SSD Ltd., JAPAN) or the laptop PC (NEC). Plotting the response times against vantage points, bell-shaped graphs that peaked at around 180° with relatively straight gradients were obtained as below.



In the formula $y = ax + b$, where 'x' is degrees of vantage points and 'y' is response time, 'a' was multiplied by 180 and used as the theoretical response times of *imaginary body movement*.

RESULTS

[spatial perspective-taking]

- a: *imaginary body movement*
standing < sitting ($t=3.16$, $df=29$, $p<.01$)
- b: *other cognitive processing*
n.s.

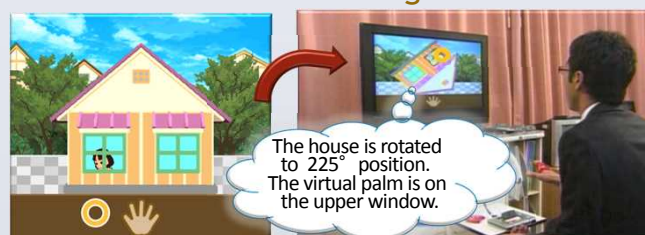
[mental rotation]

- a: *imaginary rotation of alphabets*
n.s.
- b: *other cognitive processing*
n.s.

The activation of somatic sensation helps to separate the imaginary body from the real one.

Spatial Perspective-Taking Task

The task was a hide-and-seek game.

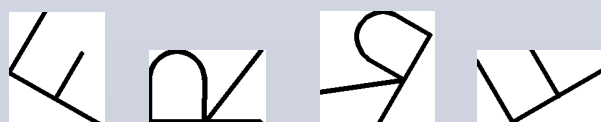


The controller's camera detected the movement of a special band that players held in their hands, and projected a virtual palm on the monitor in order to find a hiding person using it.

1. A child appears at one of the windows (upper left), after which he or she immediately hides behind the window frame.
2. After a countdown and the "START" signal, only the house is rotated at any vantage points.
3. Participants were instructed to indicate which window the child was hiding behind with a virtual palm (upper right).

Mental Rotation Task

The tutorial program of SuperLab was used.



Is this a normal letter, or a mirror letter ?