Culturedependentmodulations of interoceptive awareness during self-observation
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Abstract
We investigated whether the beneficial effect of perceiving one’s own face on interoceptive awareness differed between Eastern and Western cultures. We showed that Westerners’ interoceptive awareness was enhanced when they looked at their own face, but that this effect was absent in East Asian participants.

I. Introduction

Interoceptive Awareness

What is it?

- Awareness of sensory signals arising from the body
- Interoceptive awareness differs between individuals in the population

How can we measure it?

- Heartbeat detection
- Gastrointestinal distension
- Respiratory resistance

Why is it interesting?

- Related to many aspects of self-related processing:
  - Body ownership, Emotional arousal, Implicit memory

The “Self-Observation” Effect

Looking in a mirror enhances interoceptive awareness

Accuracy of heartbeat detection is significantly increased when participants viewed their own faces in a mirror during the task. Perceiving oneself from the outside enhances perception of oneself on the inside.

This effect is specific to those with initially low baseline interoceptive awareness

The beneficial effect of viewing oneself in a mirror increases linearly with baseline interoceptive awareness. Those with initially poor interoceptive awareness show a larger beneficial effect of mirror-observation.

Why is this effect important?

It can be interesting to consider the interaction between different types of self-representation, i.e. the way we represent the self internally and externally, as others would see us.

Research Questions

Is the observation of the self-face sufficient for the ‘self-observation’ effect, or does it need the real-time, dynamic qualities of the mirror?

Is the self-observation effect consistent across cultures, or do cultural differences in self-representation modulate the effect?

II. Experimental Design

Interoceptive awareness measured using a heartbeat detection method. Each participant performed heartbeat detection task in three different conditions; whilst looking at a photo of their own face (SELF-FACE condition), an unfamiliar other’s face (OTHER-FACE condition) and a black screen (BASELINE condition). Twenty Western and twenty East Asian participants completed the task.

Methods & Materials

Heartbeat detection: a measure of interoceptive awareness

- Mental Tracking method (Schandry, 1981). Participants try to count their heartbeats, without taking their pulse.
- 3 randomized trials (25s, 35s, 45s) in each condition.
- True number of heartbeats recorded with a pulse transducer.

Self-construal: independent vs. interdependent

- Measured using a 24-item questionnaire (Triandis & Gelfand, 1998).

Interoceptive awareness = \frac{\text{COUNTED heartbeats} - \text{RECORDED heartbeats}}{\text{RECORDED heartbeats}}

Participants

20 Western and 20 East Asian participants: matched on age and BMI

- Western participants originated from UK, USA, Canada, France and Germany
- East Asian participants originated from China, South Korea, Japan and Hong Kong.

Conditions

Image viewed during heartbeat detection

- SELF-FACE
- OTHER-FACE
- BASELINE

Design

Three conditions: a within-subjects factor

Two Ethnicity groups: a between-subjects factor

III. Analysis & Results

Analysis

1. ‘Change’ scores calculated: Interoceptive awareness at BASELINE subtracted from SELF-FACE and OTHER-FACE conditions, to give a measure of how interoception is changed during self/other observation.

2. Participants divided into High and Low interoceptors: Depending on whether each participant scored above or below the median baseline score for the entire sample, they were assigned to either the ‘high’ or ‘low’ baseline awareness group.

3. ANOVA on interoceptive awareness change:

   - 2 (Ethnicity: Asian vs. Western) x 2 (Condition: self-face vs. other-face) x 2 (IA Group: low vs. high)

Results

Ethnicity x Condition x IA Group interaction:

Fi(1,36) = 7.0, p = .01

In the Western Participants:

Effect of Condition found in Low baseline group:

SELF-FACE condition improved interoceptive awareness significantly more than OTHER-FACE condition:

t(10) = 2.41, p = .037

In the East Asian Participants:

No effect of condition in either Low or High baseline groups

But independent self-construal was significantly lower in Asian than Western group, and correlated with change in interoceptive awareness in SELF-FACE condition; the more independent, the more benefit from looking at the self-face, p = .031, one-tailed.

Graph showing change in interoceptive awareness from baseline for the Low baseline group during self-observation and other observation, in Asian and Western participants.

IV. Discussion

The ‘self-observation’ effect

- Interoceptive awareness can be enhanced by observation of one’s own face
- This effect is specific to those with initially low baseline interoceptive awareness
- This effect has already been shown using a mirror, but this study demonstrates that the dynamic, real-time qualities of a mirror-image are not necessary for the effect. Rather, it is the self-specificity of the image that is important.

The role of ethnicity and self-construal

- The interoceptive awareness of East Asian participants did not differ from baseline scores
- However, the more independent their self-construal, the larger the self-observation effect they did show

- A measure of independent (rather than interdependent) self-construal was positively correlated with the increase in interoceptive awareness during self-face observation, in East Asian participants only.

V. Conclusions

Western participants can enhance their interoceptive awareness by looking at their own face. This effect is not present in East Asian participants, and may be related to their less ‘independent’ self-construal.

References