

## **Mandom identifies that the “impression of youthfulness” in a middle-aged man is given by focusing on his “cheeks”**

Mandom Corporation (headquarters: Osaka City, President & CEO: Motonobu Nishimura; hereinafter referred to as “Mandom”) is engaging in research on the impression of youthful skin and aims to provide skincare products that improve the appearance of skin.

To date, Mandom’s studies have shown that the “impression of youthfulness” in a middle-aged man is affected by the brightness of his skin, and that skincare improves the “impression of youthfulness.”

On this occasion, we used a technique termed eye-tracking, to study “which region of the face” a viewer uses to decide whether a middle-aged man appears youthful. After examining “the area around the eyes,” we observed that the viewer most frequently focused on the man’s “cheeks.” As it was already known that “the area around the eyes” would be the first scrutinized by the third-person, we concluded that a third-person looks at the “cheeks” of a middle-aged man to give his/her “impression of youthfulness.”

The results of this research were presented at the 22<sup>nd</sup> JFACE Annual Conference (Forum Kaogaku 2017) held from September 9 to 10, 2017.

### **[Summary of Study]**

#### **1. Method used by a third-person to evaluate the impression of a middle-aged man using facial images**

We photographed male subjects (35 to 49 years old) using a three-dimensional camera (\*1); the facial representation of 40 front-view facial images was captured via two-dimensional extraction. Using these images and an eye-tracker (\*2), we captured visual measurements of the features used by a third-person assessor (a total of 19 men and women in their 20s and 40s) to indicate the “youthfulness” of subjects. Each assessor was presented a single image for ~5 seconds before asked to evaluate the “impression of youthfulness” on a five-stage scale; this was repeated for the remaining images. To avoid a sequential effect when presenting the facial images, we randomized the order in which the images were presented.

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## 2. Analysis of time spent honing on each region of the face

We divided the facial image into 10 sections (Figure 2), and used the following procedures to calculate the period of time spent focusing on each region of the face:

- ① For each facial image, we calculated the mean time spent staring at each of the 10 sites by all assessors (the average amount of seconds spent on each site).
- ② Based on ① the mean time spent on each of the 10 sites was calculated for the 40 facial images.
- ③ Based on ②, we calculated the proportion of time spent on each of the 10 sites.

When the focus regions used by assessors were tallied, ~30% judged the impression of “youthfulness” using “the area around the eyes” and ~20% used the “cheeks” (Figure 3).

However, since “the area around the eyes” is the known focal region used by a viewer when giving their impression, we inferred that “impression of youthfulness” in a middle-aged man is given by focusing on his “cheeks”; this is because assessors spent the second longest time, after “the area around the eyes”, when giving their impression (Figure 4).

Mandom will apply this knowledge to future research on skin impression to develop skincare products for middle-aged men.

\*1 Three-dimensional image camera: VECTRA H1 (Canfield Scientific).

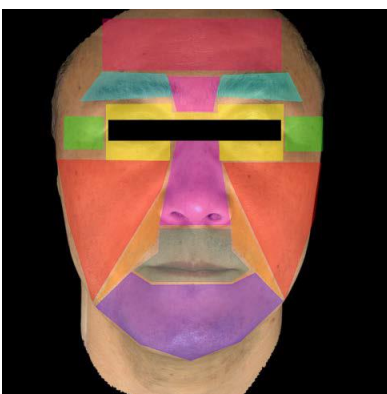
\*3 Eye-tracker: Tobii Pro X2-60 (Tobii Technology).

### <Reference Material>

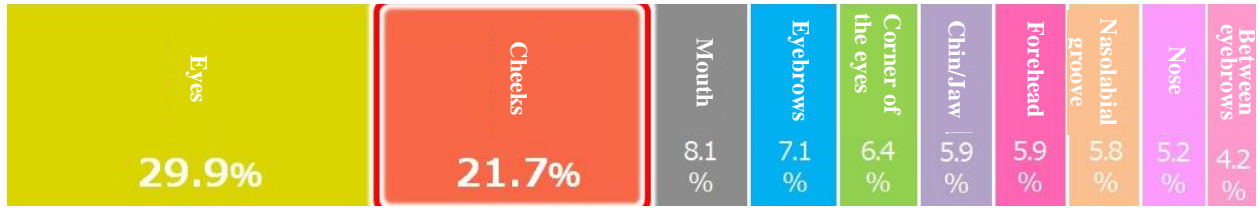
**Figure 1. Image of the set-up used in the eye-tracking study.**



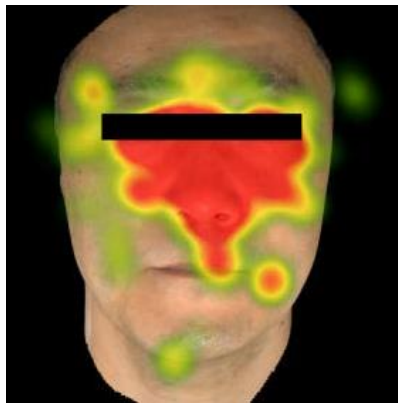
**Figure 2. An example of the division of facial images into 10 sites of focus.**



**Figure 3. Proportion of time spent inspecting each focal site when unravelling “impression of youthfulness.”**



**Figure 4. Regions of the face used to evaluate “impression of youthfulness.”**



\*Red represents the focal regions used by assessors.

**<Reference News Release>**

Mandom’s comparative analysis of the present state of the skin of men to the state approximately 10 years earlier. The “impression of youthfulness” of men in their 40s is determined by “brightness of the skin” (News Release on September 26, 2017)

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