

# Differences of Cast Shadows on Food Image Perception

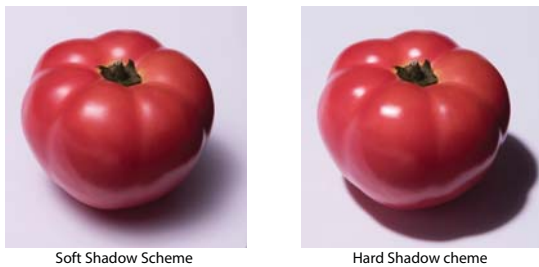
## Tsukuba, Japan

### Preliminary work

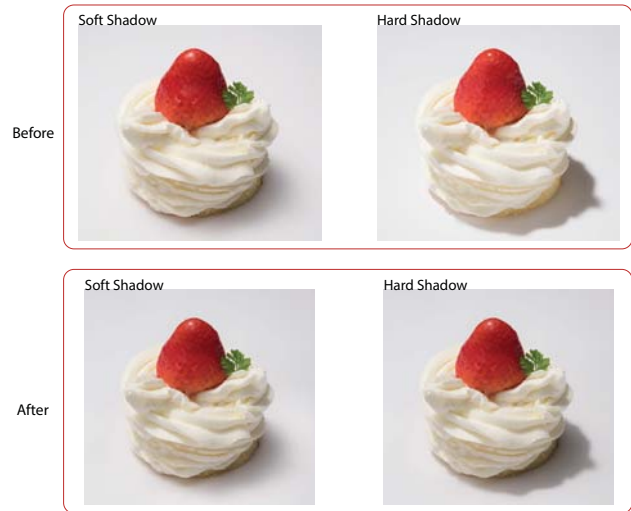
In photography there are several techniques applied to the creation of food images. Each technique has been developed in order to enhance visual characteristics of the food. Although food images can be classified according to its purpose; labels, menus, pamphlets, websites, etc. It is possible to identify several visual elements within their composition.

Additionally, color, lightning, background, decorations, shadows and camera angle are some if not all the visual elements that have to be considered when creating this type of images. For this reason, several scientific researches have been conducted in order to see how most of these visual elements have an influence on the taste of the food (Mizutani et al., 2010; Wada et al., 2010), the purpose of this research is to explore the influence of shadows on food image perception.

At an early stage, several food images were creating using a soft and hard cast shadow template. During the procedure it was noticed minor differences in color, highlight and contrast within the images meaning that the evaluation of the images would have to consider this noise and would not be a shadow only evaluation.



Therefore a shooting procedure was developed in order to have the same visual characteristics on every image with the exception of the shadow. An image was created using each one of the shadow templates; to later have all the values averaged digitally, leaving the original cast shadows for each template aside.



### Food Images Evaluation

#### 1. Participants:

Graduate and undergraduate students were recruited from the University of Tsukuba (aged 20-30 years, M=24.5, SD= 2.72). All participants had a self-reported normal sense of sight.

#### 2. Surveys and evaluation scale

A first survey evaluated how important are the different visual elements on food images, while a second survey focused on the evaluation of different descriptors related to food. Both surveys used a 7 point intensity scale, being 0 the lowest score and 6 the highest.

##### Survey 1: Visual Elements evaluated

Color  
Illumination  
Background  
Decoration  
Shadows  
Camera Angle

##### Survey 2: Descriptors evaluated

Familiarity  
Affinity  
Consumption  
Exiteness  
Hapiness  
Deliciousness  
Sweetness  
Bitterness  
Juiciness

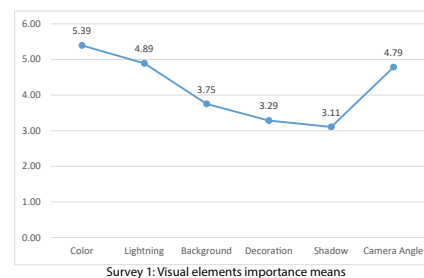
Saltiness  
Freshness  
Safeness  
Hotness  
Coldness  
Sadness  
Healthiness  
Crispness  
Sourness

#### 3. Experimental Procedure

At the beginning of the experiment, all the participants were told to recall any food image of their choice. After they recalled the food image, it was requested complete survey 1.

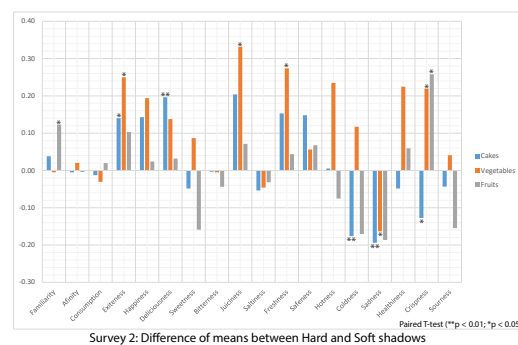
Immediately after completing the survey, food images were randomly shown and while gazing them, the participants proceeded to answer survey 2. After completing survey 2 they had a small refreshing brake to proceed with the next image until all the images were evaluated (within participant design).

#### 3. Results



Color and lightning are the visual elements with highest mean score while shadow is the lowest.

Shadow importance or level of awareness does not play a significant role when memory recall was done.



Cakes could be good candidates for deliciousness, coldness and sadness evaluation.

Vegetables for exiteness, juiciness, freshness, crispness evaluation.

Fruits for crispness evaluation.

#### 4. References

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- Mizutani, N., Okamoto, M., Yamaguchi, Y., Kasukabe, Y., Ippeita, D., Yamanaka, T., (2010). Package Images Modulate Flavor Perception for Orange Juice. *Food Quality and Preference*, Vol.21 p.867-872
- Sakay Rodriguez, O., Masuko, S., Yamanaka, T., (2017) The effect of shadows on "Deliciousness and Freshness" Impression on Food Images (Phase 1: Shadow template and food images creation), Poster session presented at the 12th Japanese Society of Kansei Engineer Conference (JSKE), Osaka, Japan

#### Author(s)

Sakay R, Oscar E.

Masuko, Soh

Yamanaka, Toshimasa

#### Organization

University of Tsukuba

Rakuten Institute of Technology

University of Tsukuba

