An Approach to Understand Preference Mechanism in Product Evaluation

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1. Introduction

Preference has been addressed as an important theme in design whereas preference mechanism has not been well explained. This study shows the relationship between preference mechanism and product evaluation using automotive image.

2. Method

2.1. Subjects

Thirty university students (15 females) recruited from University of Tsukuba. No subjects have taken part in any kind of similar experiment before. All subjects were native Japanese speakers, and none of them majored in design.

2.2. Stimuli & item screening

The subjects, who participate in the experiment, conducted item screening one week before participating in product evaluation as follows. Four groups of stimuli were used: Seventy car-front-face images, car-side images, and car front and side multi-aspect images used as Uninominal Reality Sets. Seventy front & side combination images used as Binominal Reality Sets.

Subjects separated stimuli like and dislike around half and half. After that, subjects selected twenty-five preferred images from the preferred image group, and also did for the non-preferred group as the same as preferred group. Then, arranged the twenty-five preferred images from the most to least, and did the twenty-five non-preferred images as the same as preferred images.

2.3. Stimuli reconciliation

2.3.1. Uninominal Reality Sets

The screened stimuli prepared to reunify along with the logic as follows: (i) With car-front-face images, the headlights were separated from those most preferred and those least preferred car-front-face images.

Then, headlights were combined with bodies into new stimuli. (2) With car-side images, the wheel was separated from those most preferred and those least preferred car front images. Then, wheels were combined with bodies into new stimuli. (3) With car-multi-aspect images the headlights and wheels were separated from those most preferred and those least preferred car-multi-aspect images. The headlights and wheel were combined with bodies into new stimuli. As mentioned above, item screening was conducted to select images that meet the following criteria: product images perceived as like or dislike for the corresponding subjects’ preferences.

2.3.2. Binominal Reality Sets

With car front & side images, the sides were separated from those selected those most preferred and those least preferred car front face & side images. Car fronts were combined with car sides into new stimuli.

2.4. Product evaluation

The subjects evaluated on three evaluation factors: preference, aesthetic, and pleasure, with nine scales; from strongly disagree to strongly agree.

3. Analysis & results

A two-way (2 × 2) mixed-design analysis of variance (ANOVA) was performed on the evaluation difference scores for each stimuli: Subjective Preference in car body × Subjective Preference in car headlights; Subjective Preference in car body × Subjective Preference in car wheels; Subjective Preference in car body × Subjective Preference in car headlights & wheels; Subjective Preference in car front face × Subjective Preference in car side. In order to accommodate individual differences in evaluation, a mean evaluating score for each subject was used as dependent variable.

In car-front-face images. It did not show any significant interaction effect in all evaluation values (i.e. aesthetic.
pleasure, preference). From the findings, it could be assumed that Subjective Preference of both factors is related to product evaluation independently [Table 1]. In car-side images: It did not show any significant interaction effect in all evaluation values. From the findings it could be assumed that Subjective Preference of both factors is related to product evaluation independently [Table 2]. In car-multi-aspect images: It did not show any significant interaction effect in all evaluation values. From the findings it could be assumed that Subjective Preference of both factors is related to product evaluation independently [Table 3]. In car front & side images: If permitted the significant interaction effect in pleasure, Subjective Preference is related to product evaluation in all evaluation values. From the findings it could be assumed that the factors are related to product evaluation dependently [Table 4].

### 4. Consideration & conclusion

According to the relationship between Subjective Preference of factors and reconciliated images in Uninominal Reality Sets, preferred factors influence the reconciliated images linearly; if reconciliated images involve preferred factor, it was evaluated preferred (balanced, pleasant). On the other hand, in Binominal Reality Sets, preferred factors influence reconciliated images if it consists of preferred factors only; if the reconciliated images involve non-preferred factor, it was evaluated only non-preferred (unbalanced, unpleasant). Although subjects were asked to assimilate the separated-image as one, they could not: The separated-image could not be integrated as one whole, thereby evaluating as isolated wholes.

This finding shows the consequence of assimilation of factors of image as one whole in product evaluation: To be evaluated as more preferred (balanced, pleasant), factors of image should be assimilated as one whole. Recently, several authors considered the role of the product appearance on consumer product evaluation or choice [1-5]. Holistic view impression has been addressed as an important understanding in product evaluation. Designers may consider how the design will look as a whole. The integration of a consistent look is an important aspect of understanding preference mechanism. Orth et al. revealed that holistic designs are useful in identifying visual competitors; packages within a holistic design type appear similar to consumers [6]. Their studies determined how these holistic designs are related to individual brand impressions or product images. Otherwise, the present study investigated the difference between one holistic view and separated image in product evaluation, and to the author’s knowledge, experimental approach of preference mechanism using Subjective Preference has not been reported. This consideration shows that the difference may occurs not from like or dislike per se, but from the assimilation in Reality Sets.

As further study, it will be needed to increase the samples. To generalize the findings, it can not say that 30 subjects enough for the verification process. Additional investigation also will be needed to prove if other designed-object images show the same consequence as the findings. It can lead the designers to understand what users appreciate in product in various Reality Set.

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### 6. References