Do Measures of Ocular Gaze correlate with Subjective Ratings in Assessing Aesthetic Preferences for Faces?

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Background

In viewing a painting, a person undergoes two phases, a viewing phase and an analysis phase. The viewing begins with a quick survey of the visual field, allowing the person to develop an impression of the image and the meaning of the composition. The analysis phase consists of an analysis of the features first detected in order to satisfy cognitive curiosity and develop an appreciation of the image. It was found that participants analyzed paintings in a way that would cause them to want to spend more time with the work and, therefore, be more appreciative of the display. This greater appreciation led participants to consider the emotional or aesthetic qualities rather than focus on the pictorial elements of the image (Locher et al., 2006).

Art images (paintings) matched and compared with non-art images (photographic renderings of paintings) showed further activation in reward processing in the brain when viewing an art image. Also, participants preferred the art images and rated them as more beautiful (Lacey et al., 2010).

The presence of art can impact consumer perceptions of the evaluation of an associated product, a phenomenon called “art infusion.” Art infusion is independent of content and “luxury connotations of art” become a part of the product with which it is associated. Therefore, the art infusion effect can occur without conscious attention and cognitive resources (Hagtvedt & Patrick, 2008). This indicates the importance of art and our analyses of art, but does not specify the type of art that is most influential.

The present study aims to use self-report ratings and eye tracking equipment to measure the aesthetic pleasingness of a portrait as compared to a photograph. As Locher (2006) had examined, the eye tracking equipment will assist in evaluating how the composition of an image affects a participant’s viewing behavior.

Hypotheses

• The faces in portraits will be rated higher for pleasingness than faces in the photographs. Physiological measurements recorded from the eye tracking equipment will correlate with the subjective ratings provided by the participants.
• Paintings will be perceived as higher in value as compared to the photographic renderings. The subjective ratings will provide evidence for this.

References


Pre-Testing

• Participants were shown 81 pairs of paintings and photographic renderings of those paintings simultaneously and then individually.
• Portraits and photographs of faces were matched for variables such as gender, artistic medium, ethnicity, face shape, facial hair, hair color, eye color, and facial position (full or profile).
• When presented simultaneously, 18 participants rated the pairs on similarity and aesthetic pleasingness on a 5 point scale (1 being not at all pleasing and 5 being extremely pleasing). When presented individually, the 18 participants rated the images on beauty, aesthetic pleasingness, recognition, and likability on a 5 point scale.
• Final stimuli for our study were selected from the pre-testing study based on mean ratings of similarity and aesthetic pleasingness.

Methods

Phase I: Subjective Ratings (Control)

• Participants viewed the portraits and photographic renderings selected after analyses of the pre-testing. While viewing the 11 selected pairs, participants reported on aesthetic pleasingness, beauty, and whether they considered the image that they found to be more aesthetically pleasing to be a work of art. They were also asked if they considered the image that they selected as less aesthetically pleasing to be a work of art.
• In addition, participants in two different conditions answered either (1) "Which of the two images is most aesthetically pleasing?", or (2) "Which of the two images would you be more likely to purchase?"

Phase II: Subjective Ratings with Eye-tracking

• Participants were shown 81 pairs of paintings and photographic renderings of those paintings simultaneously and then individually.
• Portraits and photographs of faces were matched for variables such as gender, artistic medium, ethnicity, face shape, facial hair, hair color, eye color, and facial position (full or profile).
• When presented simultaneously, 18 participants rated the pairs on similarity and aesthetic pleasingness on a 5 point scale (1 being not at all pleasing and 5 being extremely pleasing). When presented individually, the 18 participants rated the images on beauty, aesthetic pleasingness, recognition, and likability on a 5 point scale.
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Results

Nine volunteers participated in a preliminary stage of the study, which did not include the eye-tracking equipment. There were 4 participants who were asked this version of the first question as they viewed the pairs of stimuli, “Which of the two is most aesthetically pleasing?” Then 5 participants were asked this version of the first question, “Which of the two would you purchase?” The descriptive results for responses to the first question are included in Table 1. Based on the small sample size at this time, any interpretation of the descriptive results would be premature. Data collection and full analyses of the data, including additional ratings of artistic value of each of the pair of stimuli (paintings and photos) will continue after Stander.

Table 1. Mean (SD) choices for aesthetic pleasingness and likelihood of purchase.

<table>
<thead>
<tr>
<th>Type of question</th>
<th>Stimulus Medium</th>
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<tbody>
<tr>
<td>Which is more aesthetically pleasing?</td>
<td>Painting</td>
<td>5.50 (4.04)</td>
</tr>
<tr>
<td>Which are you more likely to purchase?</td>
<td>Photograph</td>
<td>6.00 (3.61)</td>
</tr>
</tbody>
</table>

Discussion, Future Directions, & Implications

• The higher pleasingness rating is likely due to the greater aesthetic appreciation associated with art. The greater aesthetic appreciation for the artistic representation results from a person’s in-depth appraisal of multidimensional qualities of art, such as style, form, and expressiveness of the piece of art. These qualities are not necessarily appraised when a person views a photograph.

Phase II: Subjective Ratings with Eye-tracking

• Head mounted cameras will record the participants visual scan paths, fixation times, and pupil dilations
• To observe whether ocular gaze correlates with subjective ratings, participants will provide ratings of aesthetic pleasingness, similarity, and perceived value of the stimuli immediately after viewing a pair.
• Results from this study have implications in marketing and product development, as well as improving our understanding of what is considered “art” and how it adds to perceived value. Furthermore, the use of physiological measures, such as those of ocular gaze, along with the ubiquitous subjective ratings stands to illuminate better the intimate relationship between body and mind.