Visual Preference for Curvature and Art Paintings: Some Data

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The preference for curvature is a cognitive effect that has risen in the laboratory using several kinds of elements: natural objects, meaningless patterns, drawings, geometrical figures, simple lines, interior spaces, car interiors and exteriors, typefaces, among others. So, our objective was to check whether the effect of preference for curvature also rises in viewing artworks. We used abstract paintings that could be classified as cubist with two versions: the original one (cubist) and the altered one in which we had rounded some vertices from the original. All the participants rated both versions for 83 ms. The results showed two effects: a negative effect of mere exposure, and an effect of preference for curvature in the group of paintings with 6 "rounded" vertices, but not in the group with 4 and 5 "rounded" vertices.

When someone has to choose between two versions of the same object, and one is curved and the other one is sharp-angled, humans tend to prefer the curved one, whenever there is no other main factor. This effect has been called Preference for Curvature and has been found on different contexts. Bar & Neta (2006, 2007) reported it on images of everyday objects and meaningless patterns. Silvia & Barona (2009) reported it with geometrical shapes and Vartanian et al. (2013) with pictures of architectural interiors and architectural spaces. Bar & Neta (2006, 2007) supported the hypothesis that this effect could be on account of the sense of threat caused by sharp shapes and angles. Recently, Bertamini et al. (2015) pointed out that this hypothesis was not enough to explain the Preference for Curvature and showed that curved shapes are pleasant by themselves and stimulate approach behaviours. The present study raised the possibility that the Preference for Curvature could also be found by viewing abstract art paintings. For this aim, pairs of abstract paintings, formed by one image with curved angles and one with sharp ones, were presented during 83 ms to test out the following hypothesis: the curved images will be better rated than the sharp-angled ones.

Method

53 students (43 females and 9 males) from the University of the Balearic Islands participated in the experiment. This was a single-blind experiment with the same experimental conditions for all participants. 60 abstract paintings created by Pepperell (2011), 45 of them cubist and 15 indeterminate, were used in this study. 15 of the cubist images and all indeterminate pictures were used as distracters and were presented once in each block. We used the other 30 cubist images as targets with two versions: (a) the original cubist version as sharp, (b) an altered version in which 4, 5, 6 salient angles were rounded (Figure 1). The stimuli were distributed in two blocks. The 30 distracters were presented in each block. 15 original and 15 altered targets were presented in one block, and their equivalent 15 altered and 15 original paintings were presented in the other block. Participants were told to rate preference on a 7-point Likert scale ranging dislike (0) to like (6) with a mouse click. Blocks as well as the images within them were presented at random. A single trial consisted in a fixation cross for 500 ms, followed by an image for 83 ms. Immediately after the image, a white noise mask was presented for 500 ms and led to the rating scale which consisted of 7 squared buttons (Figure 2).

Figure 3. Average and 95% interval confidence of the liking rate according to presentation and condition: curved and sharp.

Figure 4. Average and 95% interval confidence of the liking rate according to number of retouches and condition (curved and sharp).
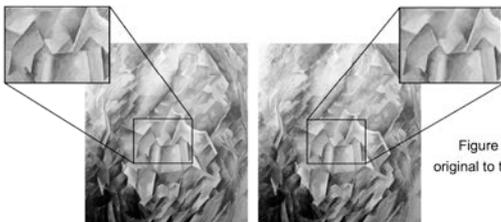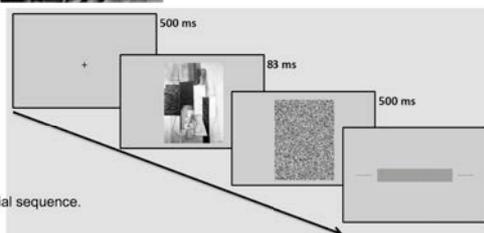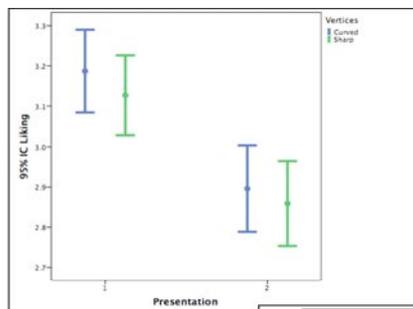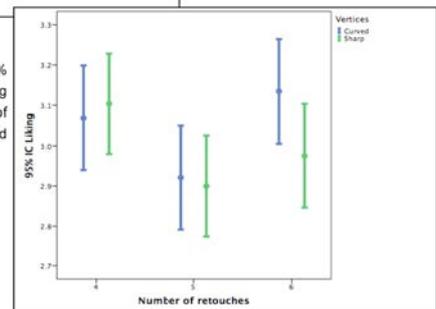

Figure 1. Example of a pair of stimulus. The original to the left and the altered one to the right.

Figure 2. Trial sequence.

Results

An ANOVA 2x2 was carried out (Figure 3): Presentation (first, second) x Vertices (curved, sharp). It revealed a significant main effect of Presentation, $F(1, 51) = 15.40$, $p<.001$, $\eta_p^2 = .232$. Neither Vertices nor the interaction showed significant differences.

A second ANOVA 2x3 was carried out (Figure 4): Vertices x Retouches (4, 5, 6). There was a significant main effect of Retouches, $F(1, 51) = 17.52$, $p<.001$, $\eta_p^2 = .256$. Neither Vertices nor the interaction showed significant differences in the ANOVA. However, there seems to be a trend to increase the differences between curved and sharp vertices in the group of the paintings with 6 altered vertices. We need to explore it in detail.

Conclusions

The results showed a clear negative effect of mere exposure, this is, the participants rated significantly higher the stimuli in the first presentation than in the second one. These results have some similarity with those from Zajonc et al (1972) where the authors indicated the possibility that abstract paintings could be an exception to the general case of the effect of mere exposure. On the other hand, we found a trend towards the preference for curvature in the group of stimuli with 6 altered vertices, but not in the others groups. This indication could suggest several possibilities: (a) it's necessary a minimum number of changes to prefer a "curved version", (b) the more number of rounded vertices the higher effect size, (c) there could be some relation between exposure time, number of changes and the preference for curvature.

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