Brain activity associated with preferences for artworks depending on the context of human or AI creators

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Previously, it has been shown that aesthetic judgments of an artwork depend on contexts, such as the authenticity (Newman et al., 2011), or the display place (Kirk et al., 2009). In the present study, we aimed to examine whether the contextual information of a creator - i.e., the human or the artificial intelligence (AI) - influences the viewers’ preference judgments of an artwork. In addition, we monitored the viewers’ brain activity by using functional magnetic resonance imaging (fMRI). 54 images of Impressionist landscape paintings were selected as human-made artworks. The other 54 images were created by Google ‘Deep Dream Generator’, mimicking the Impressionist style through deep learning algorithms. 36 participants performed a preference rating task inside the MRI scanner on each of the 108 artworks accompanied by one of the two creator labels. There was no statistically significant main effect of the creator labels (ANOVA, F(3,32) = 1.02; p = 0.31) across all the participants. However, the participants were divided into the two sub-groups -i.e., human-preferring or AI-preferring groups - based on their initial relative preference for the creator information. The human-preferring group showed the main effect of the creator labels in the posterior cingulate cortex bilaterally which is a part of the Default Mode Network implicated in the internal process while appreciating the artwork (Vessel et al., 2012). The main effect was also found in the left lingual gyrus and the left anterior culmen both of which are involved in visual aesthetic experience (Boccia et al., 2015). In contrast, the AI-preferring group showed no clusters that showed the statistically significant main effect of the creator labels. These results suggest that the contextual information of the creator has an effect on the aesthetic preference judgments of the viewers, which was reflected in the differential activation patterns in the brains of the viewers based on their initial creator preference.