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TITLE:

**On the etiology of the intensity of visual aesthetic appraisal and preferences**

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Aesthetic, Hedonic, Twin, Faces, Genetic.

## ABSTRACT:

Visual aesthetic evaluations are shared and uniquely diversified human experiences. While the process of how and why certain visual stimuli acquire value has been the focus of recent extensive research, the contribution of genetic and environmental factors to variation has rarely been examined. Here, we analyzed freely available data from the Australian Twin Registry obtained by Germine et al. (2015, N 1115 identical and 432 fraternal twins), and Sutherland et al. (Sutherland et al., 2020, N 825 identical and 418 fraternal twins) on the variation of perceived attractiveness and pleasantness for faces, sceneries, and abstract images.

We first examined at the phenotypic level to what extent evaluations were shared or unique for each set of stimuli. We then partitioned the amount of unique variance into the individual intensity and preference of visual aesthetic appraisal. Finally, we estimated twin correlations and the contribution of genetic and environmental influences to variation in the three stimuli types.

We found that the intensity of aesthetic appraisal and preferences were unrelated. Moreover, we found that aesthetic appraisal and preferences for faces, sceneries, and abstract images were moderately to weakly correlated across stimuli. Finally, we found that ~30% of the phenotypic variance was explained by genetic influences.

Our study shows that two aspects of human aesthetic evaluation can be quantified, namely intensity of appraisal and preferences, and that they are both influenced by genetic and environmental effects.

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