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Material perception across different media, comparing perceived glossiness and softness on paintings and engravings

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Abstract

Before the invention of photography, paintings were reproduced in a graphic and linear medium, engravings. To compare material perception across two modalities, paintings and engravings, we conducted two online experiments. We collected 15 pairs of color oil paintings and their engraving reproductions. Then we selected 40 elements from these 15 pairs, including fabric and skin, which resulted in 80 stimuli in total. In experiment 1, we used original (colored) versions for both paintings and engravings. In experiment 2, we used the same stimulus set, but achromatic (luminance only). Two attributes were rated in both experiments: glossiness and softness. 30 observers completed online rating tasks for each attribute in each experiment (120 observers in total). For glossiness, independent of color or black and white versions, engravings scored higher than paintings. In experiment 1, engravings were rated as glossier in 28 out of 40 pairs of variations, with 11 out of these 28 pairs showing significant differences. In experiment 2 (achromatic), engravings scored higher in glossiness than paintings in 33 pairs with 21 pairs showing significant differences. Both numbers increased when colors were removed. For softness, 21 elements in experiment 1 and 29 elements in experiment 2 were judged glossier in engravings than in paintings. Surprisingly, engravings performde well in presenting both gloss and softness. Moreover, when colors were removed, the performance of engravings in conveying glossiness and softness got even better. The increased number of significant cases underscores the robustness of this trend.