

Context.

Several studies have shown cultural differences in the visual processing of faces¹⁻³ and homogeneous objects⁴. These differences suggest that Easterners deploy their attention more broadly than Westerners^{3,5}.



These findings are in line with a dominant theory in the field suggesting that cultural differences in cognition, attention and perception may be related to social systems⁶. Specifically, because they have evolved in a more collectivistic system, Easterners would deploy their attention more broadly than Westerners, who have evolved in a more individualistic system. If Easterners have a general tendency to deploy their attention more broadly, we expect to find differences in the spatial frequency (SF) utilization in other visual tasks than face processing.

Method.

Exp 1: Scene categorization. 1050 stimuli; seven categories (highways, playgrounds, houses, skyscrapers, beaches, mountains, and pastures). 21 Canadians, 24 Chineses. Exp. 2: Object categorization. 360 stimuli; six categories (dogs, birds, insects, cars, boats, and planes). 25 Canadians, 25 Chineses. **Spatial Frequency Bubbles**⁷ (see Figure 1). Performance controlled trial-by-trial by adding Gaussian white noise $(QUEST^8).$



Cultural differences in spatial frequency utilization do not generalize across various object classes



Figure 1. Creation of one stimulus with the SF Bubbles method.

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Results.

Classification vectors were produced separately for Chinese and Canadian participants by calculating a weighted sum of the SF filters, using accuracies transformed in z-scores as weights. Independent t-tests were conducted on each SFs. The statistical threshold was found using the Stat4Ci toolbox⁹. In both experiments, more noise was added for Canadians than for Chinese to maintain performance around 58%, *t*(48)=-2.13, *p*=0.04 and *t*(43)=-3.46, *p*=0.001.



Conclusion.

Although Easterners are tuned towards lower SFs than Westerners when they identify faces and discriminate familiar from unfamiliar ones³, they use the same SFs to categorize objects and scenes. Together, these results challenge the view that the exposition to different social systems leads to the development of different perceptual strategies generalizable to various object classes.

References

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