

CROSS-CATEGORY INFLUENCE IN IDENTIFYING ORIENTATION-FILTERED FACES
AND TEXTURES

BY
ALICIA SERRANO

A Thesis

Submitted to the Department of Psychology, Neuroscience & Behaviour
in Partial Fulfillment of the Requirements
for the Degree Honours Bachelor of Science

McMaster University

April 11, 2018

HONOURS BACHELOR OF SCIENCE (2018)
MCMASTER UNIVERSITY
Hamilton, Ontario

TITLE: Cross-category influence in identifying orientation-filtered faces and textures

AUTHOR: Alicia Serrano

SUPERVISOR: Dr. Allison B. Sekuler

NUMBER OF PAGES: vi, 19

ABSTRACT

All 2-dimensional images, including faces, are composed of structure from a range of orientations. Horizontal structure is the most important orientation structure during face identification. Picture-plane inversion more negatively affects identification accuracy for faces than non-face images; however, the face inversion effect requires intact horizontal structure. In this experiment, participants viewed upright or inverted horizontally-filtered faces that were embedded in vertically-oriented texture structure. Participants completed four versions of a 1-of-6 identification task: face or texture identification, with upright or inverted faces. During face identification, the texture was task-irrelevant and common across all stimuli; during texture identification, the face was task-irrelevant and common across all stimuli. Our study evaluates the influence of horizontal facial structure when identifying non-face stimuli, even when facial information is task-irrelevant. Since our visual system pools information across a range of orientations, we investigated whether categorically different stimuli in orthogonal orientations would also be pooled. If cross-category pooling does not occur, we expect that the orientation of the face will not affect texture identification accuracy. If cross-category pooling does occur, we expect a face-induced texture inversion effect. We found a face inversion effect, but no face-induced texture inversion effect. Texture identification was not affected by the orientation of the face, suggesting that we did not detect cross-category orientation pooling. This study adds to our understanding of how categorical differences affect visual processing.

ACKNOWLEDGEMENTS

I would like to extend tremendous thanks to my supervisor, Dr. Allison B. Sekuler, for her guidance and for providing me with this invaluable learning opportunity. I would also like to give special thanks to Ali Hashemi for his patience, time, and support. Without his dedication, this project would not have been possible. Thank you for being an incredible mentor.

Additionally, I would like to thank Dr. Patrick J. Bennett, Donna Waxman, and every bright mind at the Vision & Cognitive Neuroscience Lab for making the past two years truly enjoyable and for teaching me everything that I know about research and discovery in vision science.

Finally, I would like to thank my family and friends, especially Akika and Kaushik, for giving me the confidence to do my best and for encouraging me along the way.