Specific impairments of configural processing in prosopagnosics

Claus-Christian Carbon[1], Helmut Leder[2,1], Joachim E. Weber[3], Tilmann Sander[4], Lutz Trahms[4], Martina Grueter[5], Thomas Grueter, Björn Brembs[6] & Andreas Lueschow[3]

[1]Institute of Psychology, Freie Universität Berlin, Berlin, Germany

[2]Institute of Psychology, University of Vienna, Vienna, Austria

[3]Charité, University Medicine – Campus Benjamin Franklin, Berlin, Germany

[4]Physikalisch-Technische Bundesanstalt, Berlin, Germany

[5]University of Münster, Münster, Germany

[6]Institute for Neurobiology, Freie Universität Berlin, Berlin, Germany

Abstract

Prosopagnosia is an impairment in the recognition of faces that has been attributed to deficits or inefficiency of configural or holistic processing. We have tested 13 patients (15-60 years) suffering from developmental prosopagnosia that is associated with no macroscopic brain lesions but with cognitive malfunctioning. As a control group we used a group of normal participants with an adjusted age range. In Experiment 1, participants matched 2 whole (FullFull) faces , 2 facial parts (PartPart) or a facial part with a whole face (FullPart). Prosopagnosics showed pronounced inversion effects for FullPart as well as for PartPart, indicating inefficient configural processing for inverted material. Experiment 2 revealed that increased inversion effects in such simultaneous matching tasks exist for faces but not for houses. These results are consistent with the hypothesis that prosopagnosics use inefficient processing strategies for the identification of uncommonly presented face material.