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Individual differences in face perception: Development and validation of the Oxford Face Matching Test (OFMT)

Mirta Stantic; Rebecca Brewer; Bradley Duchaine; Michael Banissy; Sarah Bate; Tirta Susilo; Caroline Catmur; Geoffrey Bird

+ Author Affiliations & Notes

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Abstract

Tests of face processing are commonly designed to identify individuals performing outside of the typical range; either developmental prosopagnosics or super recognisers. Here we describe the development of the Oxford Face Matching Test (OFMT), designed to identify individual differences in face matching performance across the full range of abilities, from prosopagnosia and autism, through the range of typical performance, to super recognisers. The OFMT is uniquely designed to span the entirety of human perceptual difficulty space through use of facial recognition algorithms in deriving item similarity ratings. In a series of six studies, the OFMT is shown to be sensitive to individual differences in the typical population, reliable and stable over time, and sensitive to atypical group performance in developmental prosopagnosia, autism, and super recognition. In Studies 1 (N=45) and 2 (N=106), the task is validated for in-person and online administration with a wide range of reported scores (mean=74.1%[59.5-84.0%] in Study 1; mean=72.9%[52.0-86.0%] in Study 2) and moderate correlations with existing gold-standard face processing measures, such as the CFMT (r=0.32* and r=0.34*, respectively). In Study 3 (N=72), the OFMT is shown to have high reliability following a 2-week delay (r=0.75*), comparable to reliability indices for similar tasks (CFMT: 0.67*, GFMT: 0.77*). In Studies 4 (N=62), 5 (N=64), and 6 (N=61), the OFMT is shown to be sensitive to differences between matched control groups and, respectively, developmental prosopagnosics (t(58)=-5.78, p<.001), super recognizers (t(62)=4.88, p<.005), and autistic participants (t(59)=-2.94, p=.005). These results indicate that the OFMT is a reliable and valid measure of face perception that can be meaningfully applied to participants across the spectrum of abilities. It shows sensitivity to individual differences across the population with a wide range of performances and no floor or ceiling performance. Future directions in refining our understanding of face matching mechanisms across populations are discussed.