

Average representations in face processing

As an alternative to exemplar representations, averages may offer an efficient way to mentally represent information about familiar faces. In a repetition priming study, we measured response times and ERPs to faces primed by either averages generated from 12 images or exemplars. Here, neither behavioural nor electrophysiological data revealed evidence for greater priming by averages. Instead, priming by exemplars was either of comparable size or even found enhanced. Our data thus cannot support the concept of average face representations for familiar faces.

The idea of statistical mean – or average –representations has recently been described in the context of representations of sets, i.e., arrays of simultaneously presented objects. For example, participants quite precisely extracted mean size information from sets of circles varying in size, while information about individual exemplars was nearly absent (Ariely, 2001). Similarly, mean emotion and mean gender has been extracted from sets of unfamiliar faces (Haberman & Whitney, 2007; 2009). In the present study, participants saw sets of four faces from different, well-known celebrities. They indicated whether a subsequent probe face *image* (Exp.1) or *identity* (Exp.2) was presented in the set. Critically, probes were either exemplars (i.e., real face photographs) or averages across the four set identities. Moreover, probes either corresponded to the set, or were new images from the same set identities, or were images from different famous identities. Participants produced large proportions of “present” responses to both the corresponding exemplar and – unexpectedly – the corresponding average conditions. In a control experiment 3, it was ruled out that the result pattern was due to participant’s response biases. In conclusion, both exemplar and set average representations appear to be extracted in parallel from famous face sets.