Authors' version of manuscript, as accepted for publication in *Trends in Cognitive Sciences*.

Date of acceptance: 20th March 2018.

What we see in unfamiliar faces: a response to Rossion

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Rossion [1] offers a clear summary of reasons why so many researchers have been persuaded that humans have developed expertise for perceiving and recognising face identity that includes the identities of unfamiliar faces. We appreciate that this is an important debate and are grateful for the opportunity further to clarify our views on face expertise. In particular, we emphasise that Young & Burton [2] (hereafter Y&B) did not claim that people are somehow blind to the identities of unfamiliar faces. Our point was that recognition of unfamiliar face identity is limited and does not show the full range of characteristics Y&B identified as criteria for expertise. In contrast, familiar face recognition largely meets these criteria. From this, we concluded that while it is appropriate to say that we are familiar face experts, it is necessary to reconsider claims that human observers are experts in recognising unfamiliar faces. Although we do not think that as humans we are experts at recognising their identities, we nonetheless fully appreciate the interest and importance of Rossion's focus on understanding what we can see in unfamiliar faces.

Rossion suggests that neuropsychological patients with prosopagnosia and members of other animal species offer examples of non-expert populations, but this conflates questions concerning expertise with the possibility of an evolved neural substrate for face perception. For example, prosopagnosia will almost certainly compromise any evolved substrate as well

as affecting acquired expertise. We think it important to keep these issues separate [3]. He also mentions young children, who may form a more appropriate comparison [4].

Y&B pointed out that the perception and recognition of unfamiliar face identity is often image-dependent. Recognition memory for unfamiliar faces can lead to high levels of performance for the studied images, but shows limited generalisation to different images of the same face [5-6]; we seem to learn specific views of faces more readily than the faces themselves. This is not simply a memory problem. Even in perceptual matching tasks where images of faces are simultaneously visible, most people make substantial numbers of errors in matching unfamiliar face identities, and performance can be very variable across different observers [7-8]. Rossion asks why Y&B describe the resulting average levels of performance as poor, when they may be around 70-80% correct? He suggests they are only poor in comparison to the near-ceiling performance often found for familiar faces. However, we think they are also poor compared to societal expectation. We have come to rely on the use of photo-ID for a large range of purposes, some security-critical (e.g. at borders) and some everyday (e.g. proving age to buy alcohol or enter a nightclub). This relies entirely on unfamiliar face matching, now known to be imperfect.

The image-dependence of unfamiliar face recognition is an inevitable consequence of the idiosyncratic variability of appearance of different faces [9]; the ways in which one person's face will vary across different everyday views are not simply the same as the variability across everyday views for someone else's face. Learning to recognise a familiar face involves learning about its idiosyncratic variability, and unfamiliar face recognition is therefore necessarily limited by the fact that the idiosyncracies of an unfamiliar face are initially unknown.

Rossion maintains that this claim is problematic because it raises the question 'how would a face become familiar?' We agree this is a central issue, and it is one we have sought to address elsewhere [10-11]. Our answer lies very much in the use of semantic or contextual information that Rossion also emphasises. An unfamiliar face can start to become a familiar face if the perceiver experiences two things: (i) variation in input and (ii) some contextual reason to cohere that variation. If you have never seen the face of Angela Merkel, once you

know that two different images are both pictures of her, you can use that information to form a representation which can encompass them, whereas the purely bottom-up visual information might not have been sufficient to encourage you to do that. Our computer simulation studies have shown this is a viable approach by demonstrating how such top-down influences can be used to create representations capable of recognising highly variable everyday images of the face of the same individual [10-11].

Y&B therefore proposed that humans become expert at recognising the identities of familiar faces, and that this expertise must to some extent be tailored specifically to each known face. Our perspective is one that emphasises recognition of familiar faces as a primary social task that is essential to appropriate interactions based on previously stored identity-specific knowledge of an individual [10-12]. For unfamiliar faces, there is no stored identity-specific knowledge; everything we can tell from an unfamiliar face must involve visually-derived semantic information [12]. This is not to deny that characteristics that may be more or less closely related to identity can be seen in unfamiliar faces and that visually-derived information can be very rich, encompassing the perception of age, gender, ethnicity, expression, gaze direction and a plethora of other social attributions [12-13]. It is important to understand how we learn to do such things with unfamiliar faces, but we suggest that these abilities are not grounded in expertise acquired specifically for seeing their unique identities.

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