No association between face identification abilities and "mind-reading" in the eyes

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Context

PS, a pure case of prosopagnosia, shows a deficit in the processing of the eyes in both facial identification and recognition of static facial expressions, suggesting those two tasks may share some common perceptual mechanisms (Caldara et al., 2005; Fiset at al., 2017). Furthermore, a recent study showed that face identification ability is related to a systematic increase in the use of the eye area (Royer et al., 2018). One hypothesis which may explain these results is that individuals with higher ability better process the fine and complex perceptual information within the eye area. If both these tasks share a common perceptual basis, it is also possible that the best face recognizers generalize this eye-based strategy to facial expression recognition. To investigate this hypothesis, we investigated the association between the face identification abilities and the ability to recognize facial expressions from subtle cues in the eye region.

Methods

- **Participants** : 71 Canadians (35 females), 21 years old on average.
- **Task 1:** Cambridge Face Memory Test (CFMT; Duchaine & Nakayama, 2006), to measure face identification ability. In this task, participants are first shown 6 target faces and are then tested by presenting one of the target faces along with two novel faces. The items can have the same views as in the introduction, novel views or novel views with noise.
- **Task 2:** Reading the Mind in the Eyes Test (RMET; Baron-Cohen et al., 2001), to measure the ability to infer mental states from subtle facial expressions in the eye region. In this task, participants are shown photographs of the eye region of actors and must chose which of four words best describes what that person is feeling.

Analyses and Results

- No correlation was found between the two tests (r=-0.02, p=0.89);
- We also divided the RMET in two sets of items, in accordance with their level of difficulty (see Domes et al. 2007). Again, no correlation was found between the CFMT and the scores on the easy items (r=-0.12, p=0.31) or the difficult items (r=0.06, p=0.62) of the RMET

Figure 1
Scatter plot of RMET and CFMT scores

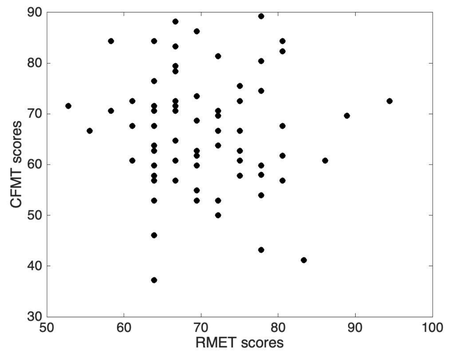


Figure 2
Scatter plot of RMET-difficult and CFMT scores

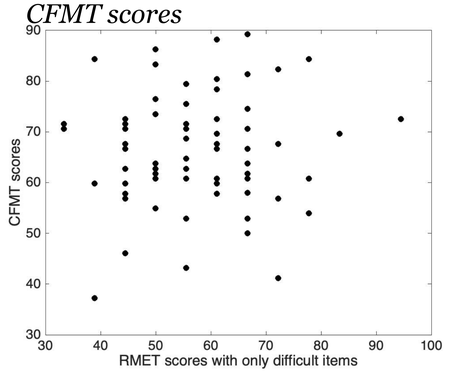
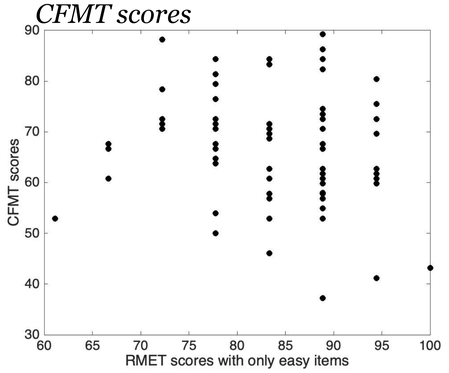


Figure 3
Scatter plot of RMET-easy and CFMT scores



Discussion

A straightforward explanation to the current finding is that individual differences in face recognition do not generalize to other face tasks, such as the RMET. A previous study showed that PS, a patient with a lesion to the Occipital Face Area (OFA), is impaired at using the eye area, no matter the task. It was also shown that the Fusiform Face Area (FFA), but not the OFA, is the locus of individual differences in face recognition (Furl et al., 2011). Thus, it is possible the extraction of the fine information contained in the eye area may depend on the OFA, but the utilization and integration of the information contained in the eyes to achieve successful face identification may depend on the FFA. Another explanation could be that the better use of the eyes in face identification may also come from an attentional bias toward this part of the face. Since only the eye area is visible in the RMET, it is possible this eliminates the difference between the individual with lower and higher abilities.

References

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