Detecting Unspecified Familiar Faces

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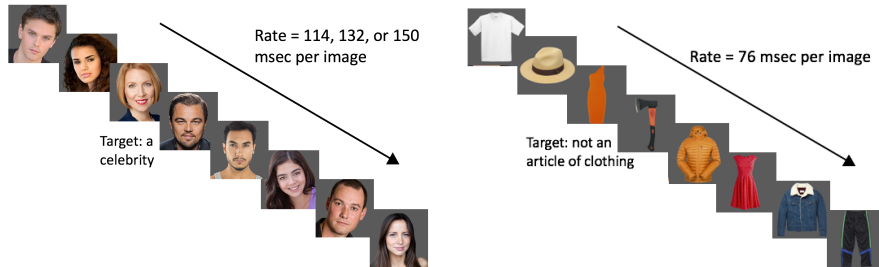
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The Detection of an Unspecified Familiar Face (Questions and Our Answers)

1. Can an unspecified familiar celebrity—*any* celebrity—be detected among faces of non-celebrities at RSVP rates? **–YES**
2. Do Congenital Prosopagnosics (CPs) perform worse than controls on this task?
   –YES, but CPs perform remarkably well on this task—better than on non-speeded celebrity recognition tasks!
3. Is detection mediated by a general familiarity signal, *not* linked to the identification of the target?
   –NO. Detection is overwhelmingly associated with Identification, even for CPs.
4. How does such detection of celebrity faces compare to performance on negative detection of objects (e.g., an unspecified object that is not a tool)?
   –Objects are much more easily detectable

RSVP Tasks

200 RSVP sequences each with 30 images. A given sequence consisted entirely of either faces or objects.

Rate = 114, 132, or 150 msec per image

Target: a celebrity

Rate = 76 msec per image

Target: not an article of clothing

Both tasks could be regarded as "Negative Detection" (Intraub, 1981) in that the subject had to detect an object that was *not* an instance of a prespecified category (e.g., "Not an Article of Clothing"), and for faces, a celebrity—*any* celebrity—among non-celebrities. A target was present in half the sequences, though never in the first or last six images. The subject had to report what or who the target was, e.g., "an axe" or "Leonardo DiCaprio" or some identifying information, e.g., "The guy in *Titanic*." Categories for objects were clothing, plants, tools, animals, and modes of transportation. On any given object trial, an image from any of these categories might be used as a target.
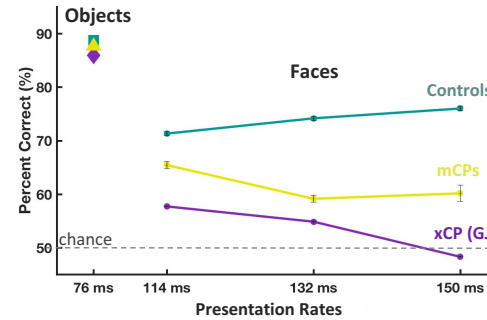
Subjects

7 "Moderate" Congenital Prosopagnosics (mCPs): USC students (Age 19 to 22 years, 5 female) selected as CPs based on their performance on: a) the faceblind.org survey (< 70), b) the Cambridge Face Memory Test (< 70), c) the USC Image Understanding Lab Celebrity Test (< 80), d) the PI20 (> 50), and unremarkable neurological history.

48 Controls: USC undergraduates, (Age 18 to 47 years, 35 female) with scores in the normal range on the above measures of face recognition ability.

1 "Extreme" Congenital Prosopagnosic (GJ): Male Age 33, faceblind.org survey: 18%, Cambridge Face Memory Test: 28%, USC Image Understanding Lab Celebrity Test: 25%, and PI20: 90.

1 "Extreme" Acquired Prosopagnosic (MJH): Male Age 53, faceblind.org survey: 3%, Cambridge Face Memory Test: 38%, USC Image Understanding Lab Celebrity Test: 26%, and PI20: 83. Also evidences some simultagnosia.
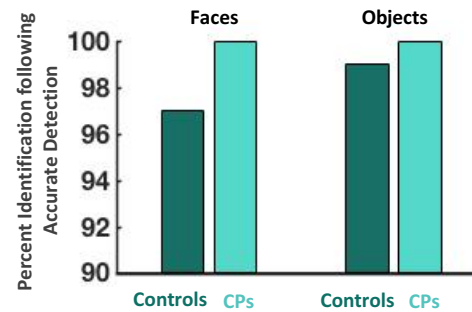
RSVP Celebrity Detection and Negative Object Detection Task

**Object Trials:** All subjects performed near ceiling.

Face Trials: Both Controls and mCPs performed well above chance on negative detection of faces, with the Controls superior to CPs.

Detection is almost always accompanied by identification

There is thus no evidence for a familiarity signal (Tranel & Damasio, 1985) independent of identification.

Doppelgänger Discrimination Task
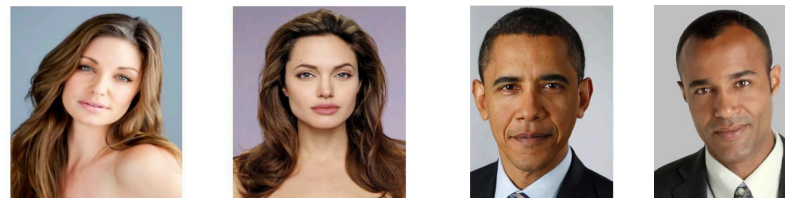
Correct Answer: Right

Correct Answer: Left

Subjects viewed 100 pairs of faces, one of which was a celebrity. The non-celebrity headshot was selected to be as similar as reasonably possible given the sampling of the headshot galleries of non-celebrities. The photogenic quality of the non-celebrity headshots were indistinguishable from the celebrities, and none of the faces underwent removal of hair or alteration of face shape as in the CFMT. No limit was imposed on the time required for a response.

Celebrity detection improves with higher rated familiarity

Prior to the RSVP and Doppelgänger Discrimination trials, subjects were given the names of the celebrities and rated their frequency of having seen the faces (1 = low; 5 = high).
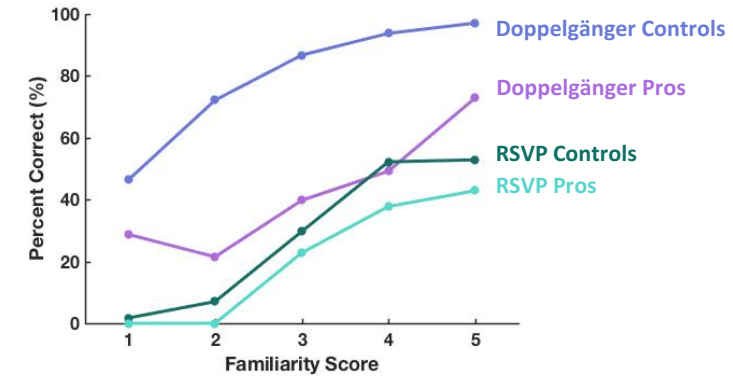
Conclusions

1. Subjects were able to detect celebrity target faces—without the celebrity being specified prior to the sequence—at RSVP rates. This is in stark contrast to what is observed in the identification of familiar voices where performance nosedives to near chance levels with just a handful of possible voices.

2. In neither the RSVP nor the Doppelgänger task was there any evidence that the subjects could avail themselves of a familiarity signal.
   RSVP Task: When subjects made a positive detection they were nearly always able to provide an accurate identification of the target.
   Doppelgänger Task: Prosopagnosics were at or below chance in their celebrity discrimination accuracy.

References
Intraub, H. (1981). Identification and processing of briefly glimpsed visual scenes. In D.F. Fisher, R.A. Monty, & J.W. Senders (eds.), Eye movements: cognition and visual perception. Hillsdale, N.J.: Lawrence erlbaum associates.
Tranel, D. & Damasio, A. R. (1985). Knowledge without awareness: an automatic index of facial recognition by prosopagnosics. *Science*, vol. 228, 1453-1455.