

## 1 INTRODUCTION

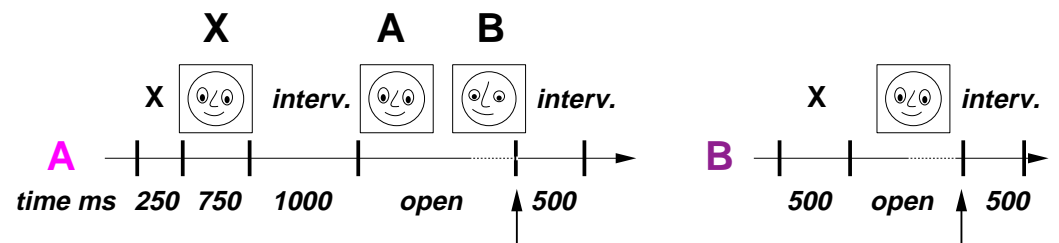
Does familiarity with faces stimuli promote the typical characteristics of categorical perception in the particular case of judgment of face gender as it has been reported for face identity (Beale and Keil, 1995)? In **Experiment 1** we asked whether the sex of an individual can be determined from perceptual information of the face alone (**shape and texture**) and whether unfamiliar male and female faces are discrete categories at the perceptual level. In **Experiment 2** the effect of **familiarity** on the performance of the observers was determined.

## 2 STIMULI AND GENERAL PROCEDURE

We used 6 male and 6 female 3D heads obtained with a 3D head-scanner (Cyberware TM). Morphs were created between all possible combinations of male/female pairs using an algorithm finding automatically corresponding pixels between images of faces (Vetter and Poggio, 1997). In **Experiment 2**, the observers had to learn to associate names to the original faces in a familiarization procedure for 10 minutes prior testing.

**A. Discrimination (XAB) task.** Subjects were asked which of a pair of images matched the first face presented in the trial.

**B. Categorization task.** Subjects had to categorize each face image as male or female.

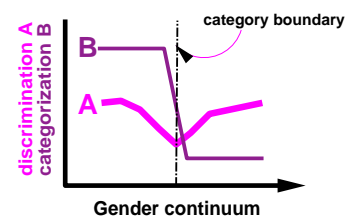


## 3 HYPOTHESES

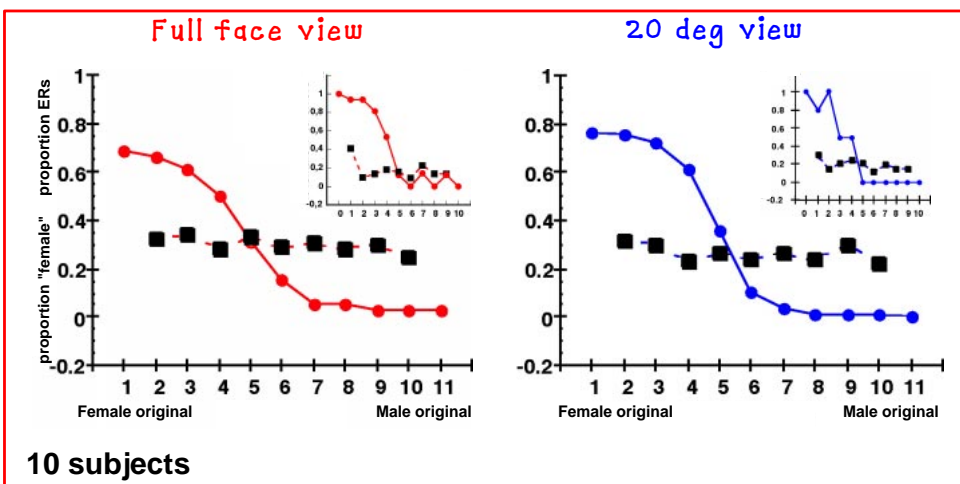
If gender perception is categorical, we expect that:

**A.** In the **discrimination XAB** task, pairs of faces are discriminated more accurately when they straddle the category boundary than when both faces belong to the same category.

**B.** In the **categorization** task, all faces are perceived as either male or female, with a sharp change at the category boundary although all faces are evenly distributed along the artificial gender continuum.

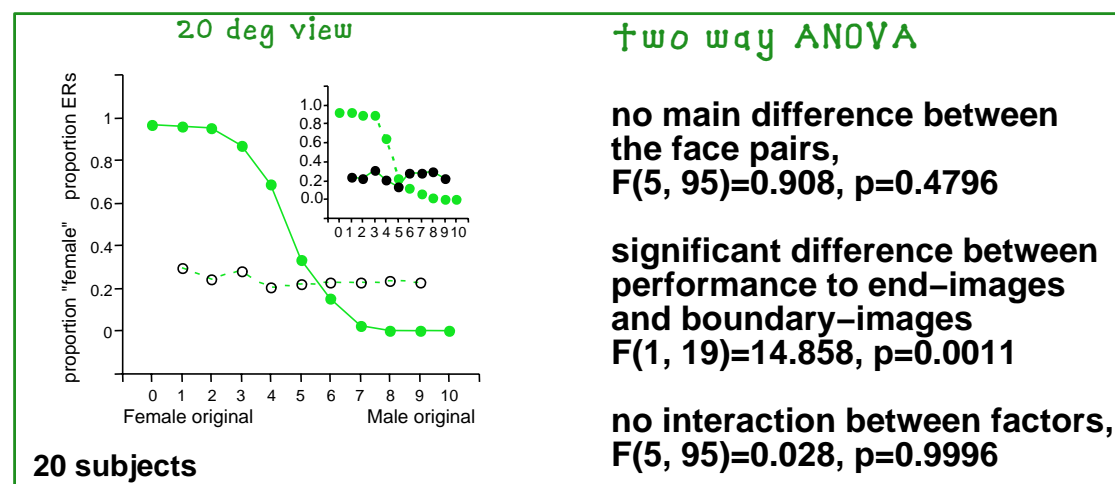


## 4 RESULTS EXPERIMENT 1



10 subjects

## 5 RESULTS EXPERIMENT 2



20 subjects

In all experiments subjects could categorize most faces by their gender in the categorization tasks (characteristic step function), but in **Experiment 1**, they did not discriminate more easily between face images situated at the category boundary in the discrimination tasks. No evidence for Categorical Perception was observed for any of the unfamiliar face pairs.

In **Experiment 1**, 20 deg views promote better categorization of sex, presumably because the shapes of the jaw and the nose were more visible.

In **Experiment 2**, prior familiarization with the faces promotes categorical perception, i.e. the observers do better discriminate face pairs straddling the category boundary than end-images as shown by a two-way ANOVA.

## 6 GENERAL DISCUSSION

In **Experiment 1** the results suggest that we do not perceive the gender of unfamiliar faces categorically. In **Experiment 2**, we have shown that prior familiarization with the faces can promote categorical perception at the level of face gender representation, as postulated by Beale and Keil (1995) for face identity. We suggest that the measured effect is slight in part due to the familiarization and testing methods. We are preparing another test called better likeness (Beale and Keil, 1995) which might allow stronger categorical perception to be detected.

## REFERENCES

Beale, J.M. and Keil, F.C. (1995). Categorical effects in the perception of faces. *Cognition*, 57, 217–239.

Etcoff, N.L. and Magee, J.J. (1992). Categorical perception of facial expressions. *Cognition*, 44, 227–240.

Calder, A., Young, A.W., Perrett, D.I., Etcoff, N.L. and Rowland, D. (1996). Categorical perception of morphed facial expressions. *Visual Cognition*, 3, (2), 81–117.