

Background

- The other-race-effect describes the disadvantage in recognizing faces of unfamiliar physiognomic trades (foreign races).
- Congenital prosopagnosia is an innate impairment of the face recognition system. The exact cause is yet unknown.

Objective

The other-race-effect (ORE) and congenital prosopagnosia both describe phenomena with negative effects on face recognition. We want to compare the impact of both phenomena on face recognition.

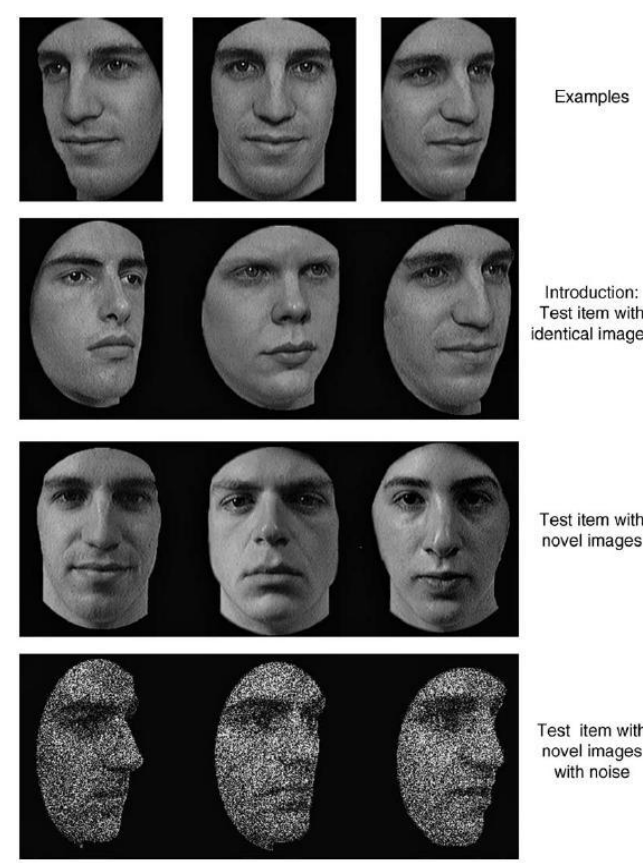
Participant groups

Participants were matched for age. There were three groups:

23 Korean unimpaired controls (KO)	6 males	Ø age = 38.9	→ KO had an other-race disadvantage
23 German congenital Prosopagnosics* (CP)	7 males	Ø age = 38.3	→ CP had a general face recognition disadvantage
23 German unimpaired controls (GE)	8 males	Ø age = 39.5	→ GE had no disadvantage

1st Experiment: Cambridge face memory test (CFMT) [1]

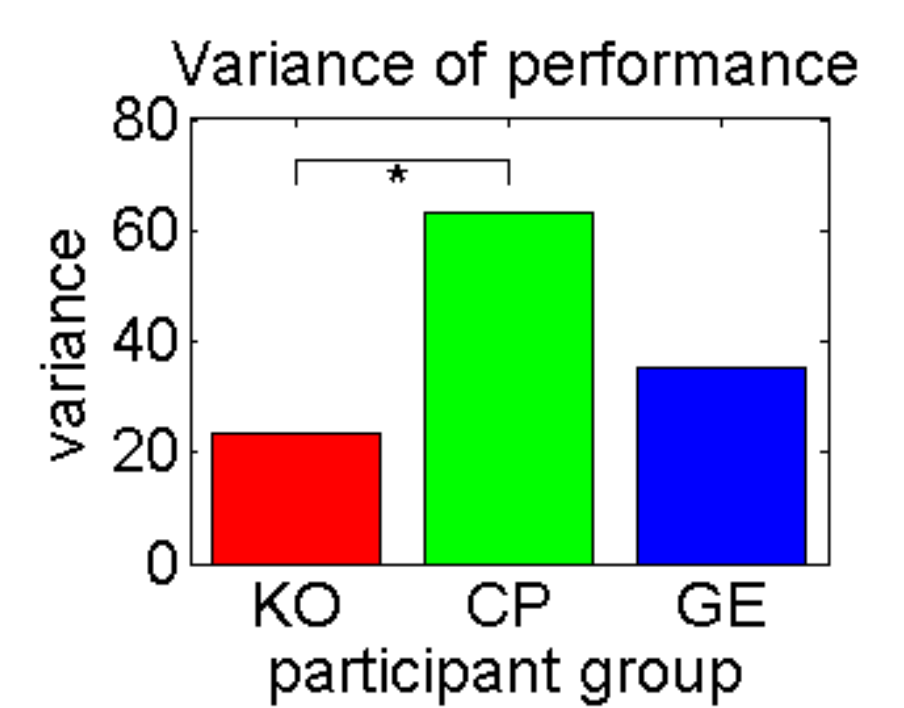
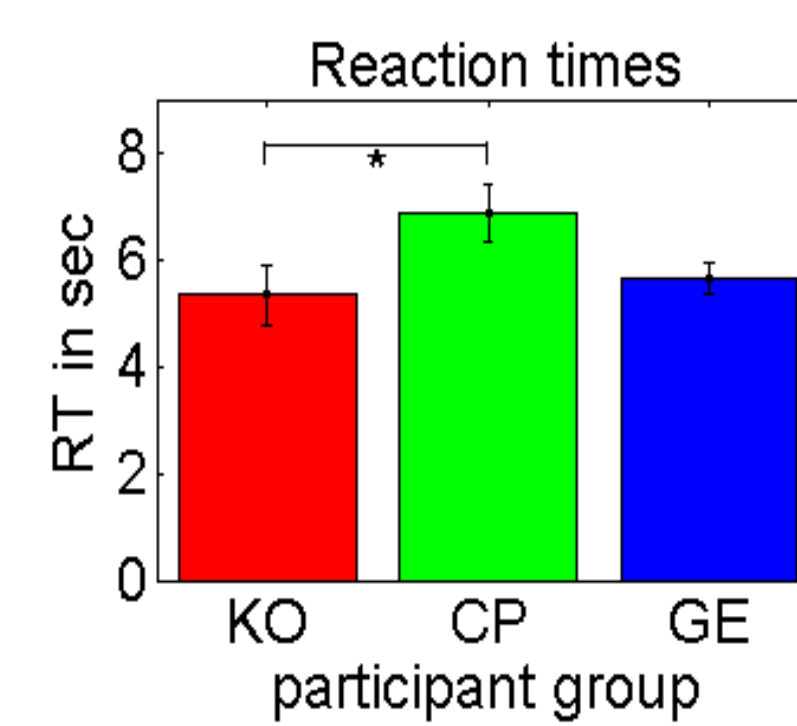
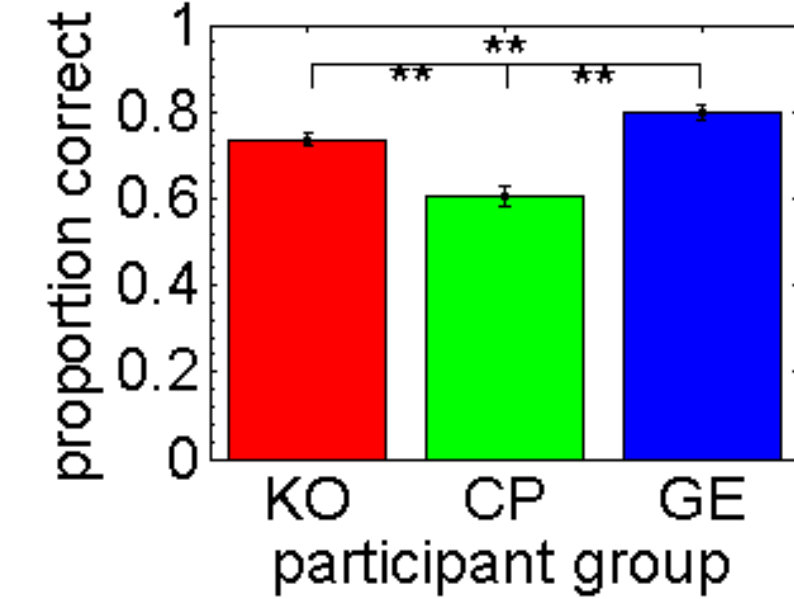
- Test for recognition of male faces in a 1in3-alternative forced choice-task
- No time restriction



Results:

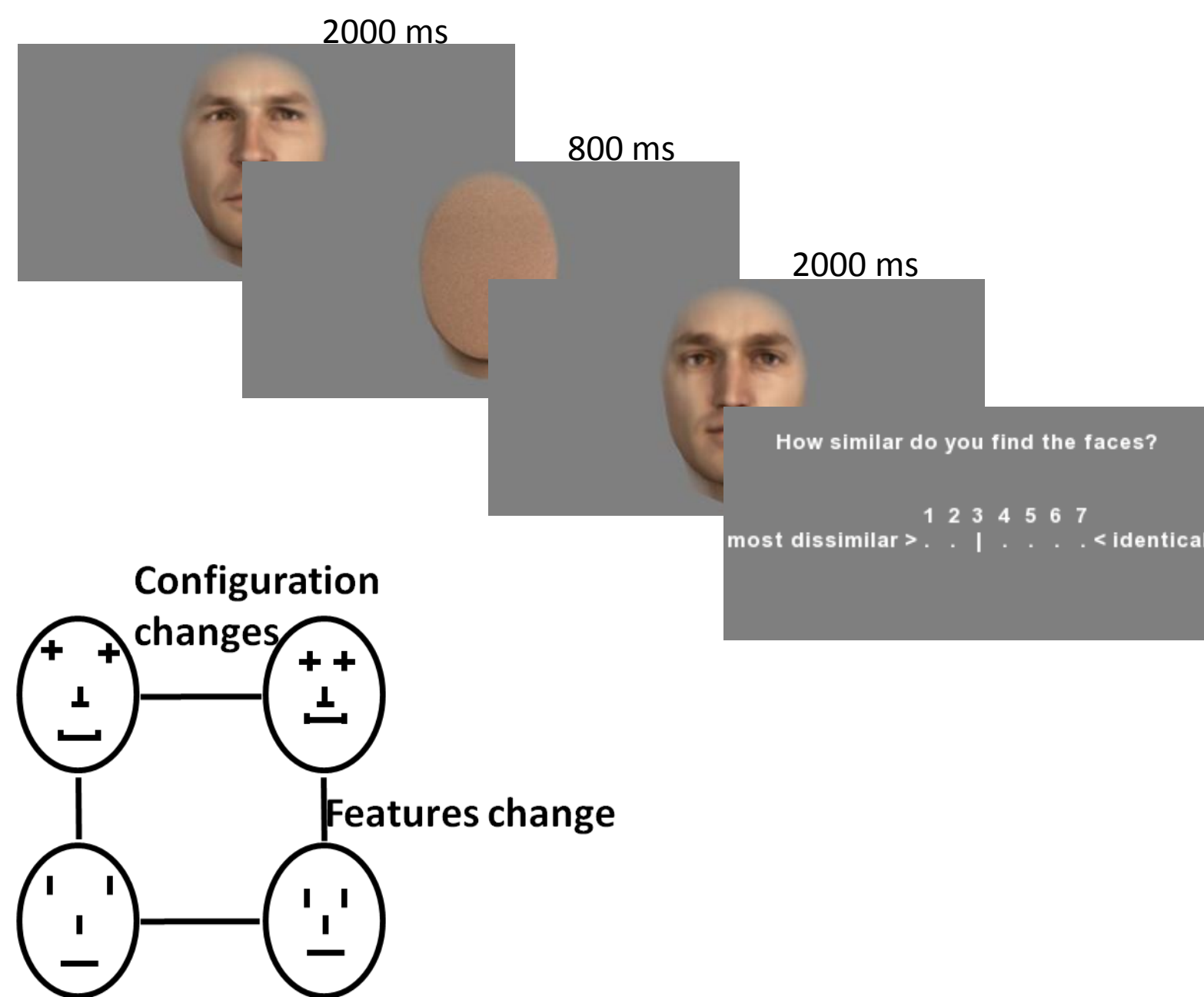
- Performance of all groups was significantly different
- CPs were overall the worst and most variable in performance and the slowest.

Correctly recognized faces



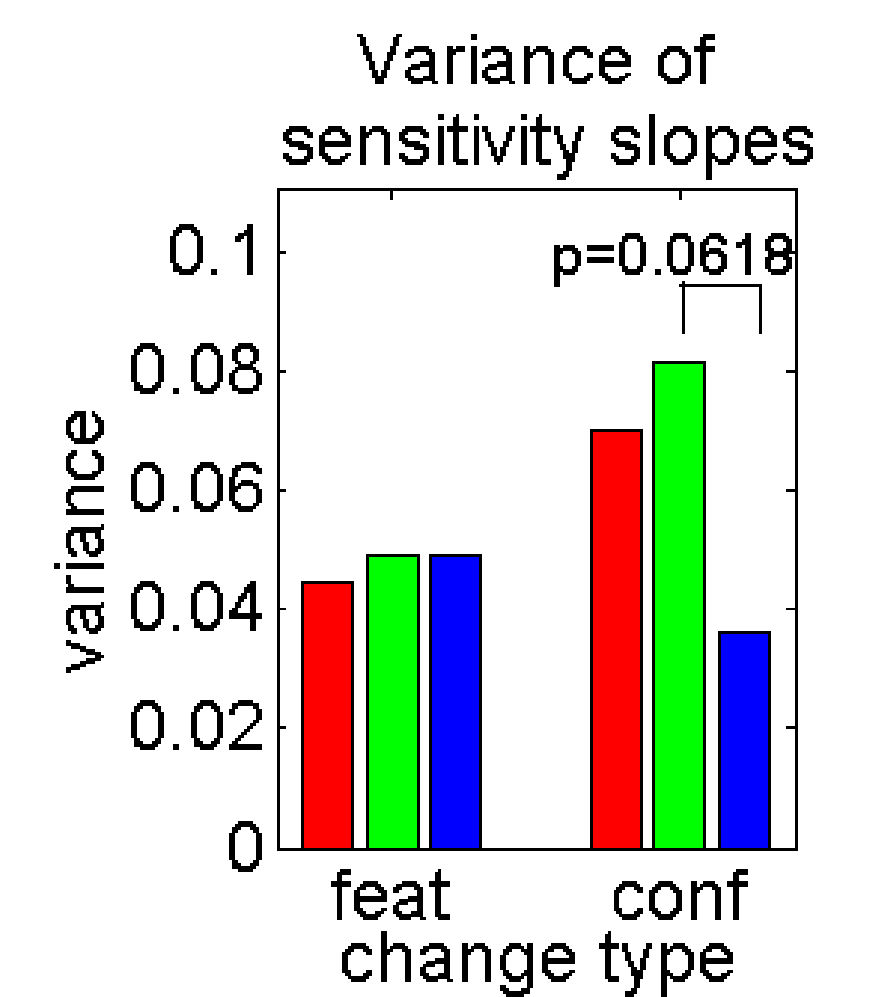
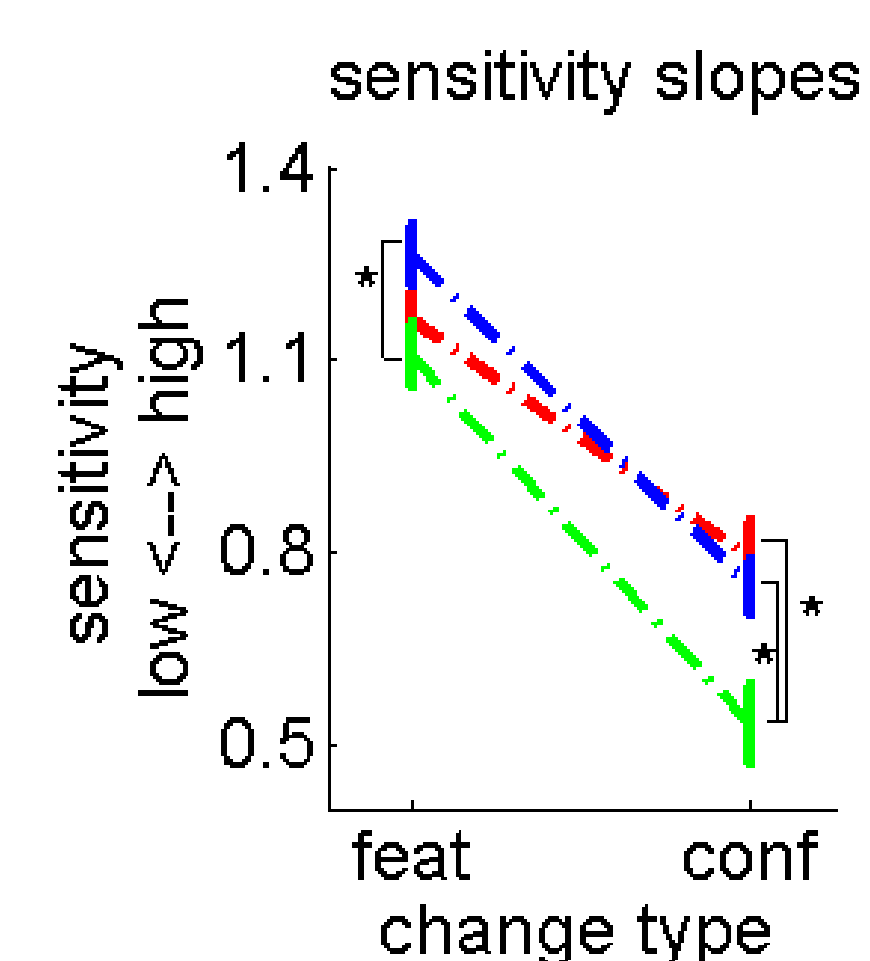
2nd Experiment: Similarity Rating [2]

- Test for sensitivity to featural and configural (2nd order spatial) changes
- Participants had to rate the similarity of faces differing in features or configuration



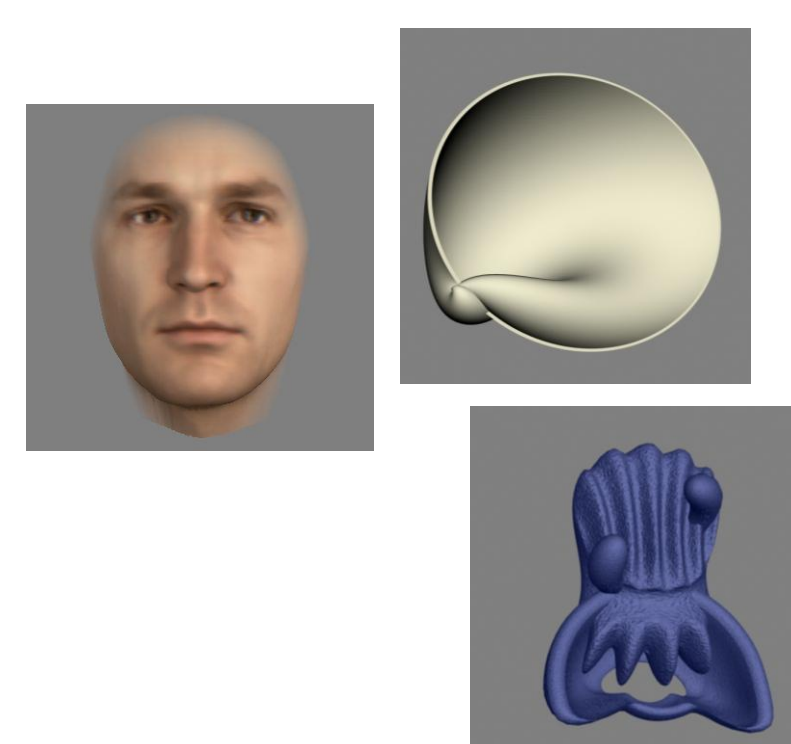
Results:

KO show greater sensitivity to configuration and lower sensitivity to features than GE. CP have a generally reduced sensitivity but a pattern similar to GE.



3rd Experiment: Object recognition

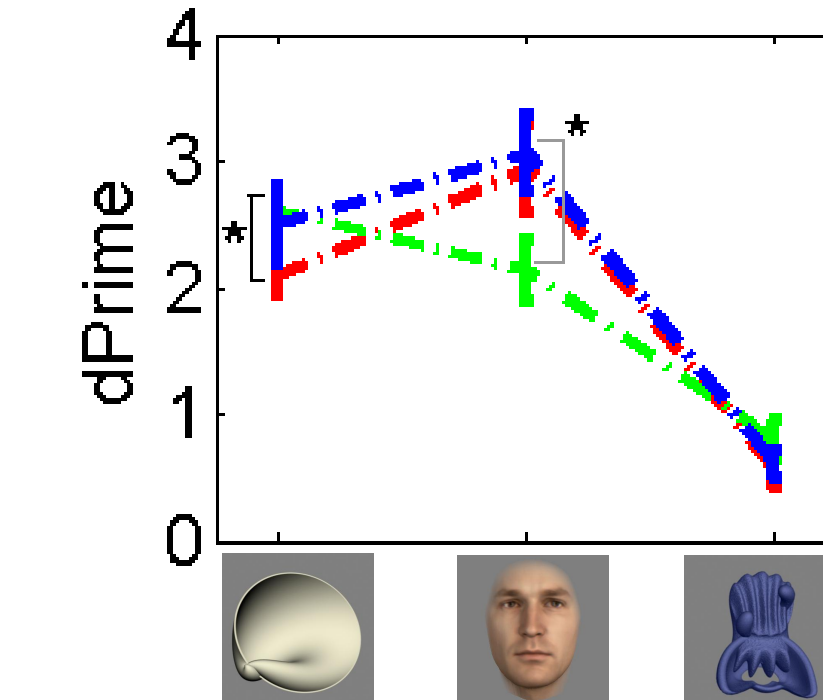
- Test for recognition of real (shells) and artificial, unfamiliar objects and faces
- Participants had to recognize previously learned stimuli in an old-new-recognition-task



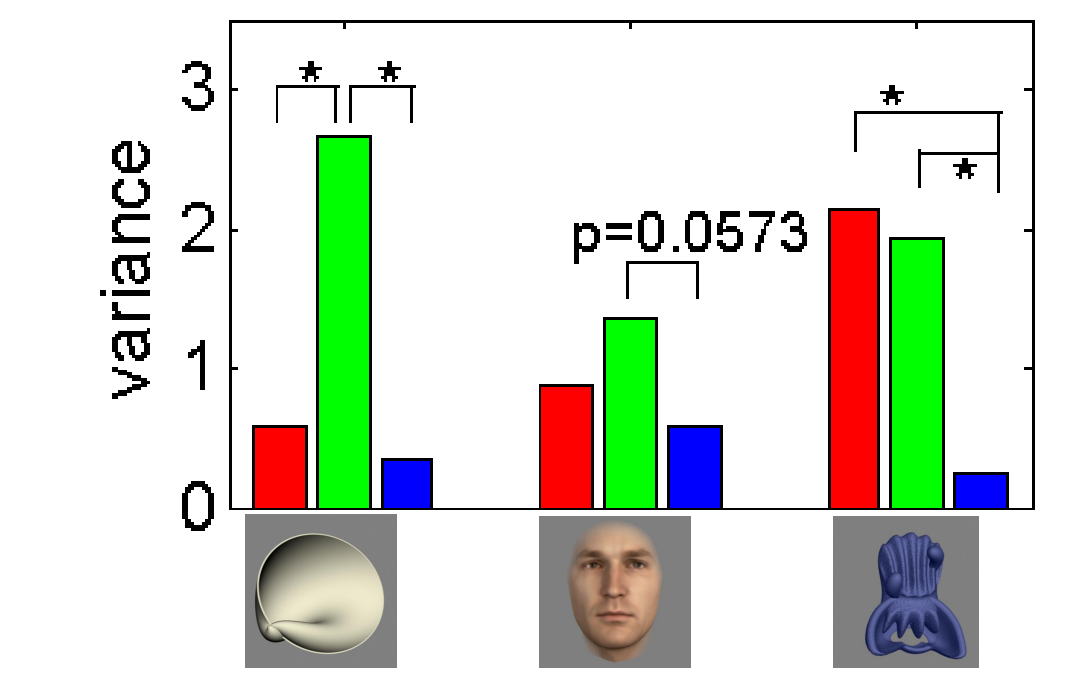
Results:

CP have a different pattern of recognition abilities compared to KO and GE

dPrime of object recognition



Variance of recognition performance



Conclusion

Both Koreans and prosopagnosics showed differences in face perception abilities compared to Germans. In tests for sensitivities to different kinds of change in a face (2nd Exp) and to different stimulus classes (3rd Exp), Koreans and prosopagnosics showed different performance patterns. This suggests a different mechanism for the other-race-effect and congenital prosopagnosia.

Outlook

The larger variances in performance of the prosopagnosic participants points our future work towards investigating the existence of subtypes in prosopagnosia.

References

- B. C. Duchaine & K. Nakayama, *Neuropsychologia*, 44 (2006), 576-85
- J. Esins, I. Bühlhoff & J. Schultz (2009). *VSS2011*

- * Prosopagnosics were diagnosed with a Screening questionnaire and a diagnostic interview as described in R. Stollhoff, J. Jost, T. Elze & I. Kennerknecht (2011). *PLoS one*, 6(1), e15702.