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The McGill Face Database: A Novel Database of Facial Expressions of Mental States

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The McGill Face Database: validation and insights into the recognition of complex facial expressions of mental states

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Introduction

- Most databases of facial expressions of mental states typically represent only a small subset of expressions
- usually covering the basic emotions (fear, disgust, surprise, happiness, sadness, anger)
- To overcome these limitations, we developed a large new database of pictures of facial expressions reflecting the richness of mental states (93 emotions)
- The database was validated with two different Experiments
- Experiments were done for faces in front – and side view

Methods

Experiment 1

Experiment 2

$$\eta_{agreement} = \frac{1}{n}\sum_{1}^{i=n}\sqrt{(V_{median} - V_i)^2 + (A_{median} - A_i)^2} = \frac{1}{n}\sum_{1}^{i=n} r_i$$

The Database

- The Database contains images of 93 different facial expressions, based on the terms used by Baron-Cohen et al. (2001)
- Two professional actors were recruited to interpret the facial expressions
- High quality pictures were taken under controlled lightening and perspective conditions in front view and slightly rotated (~30˚)
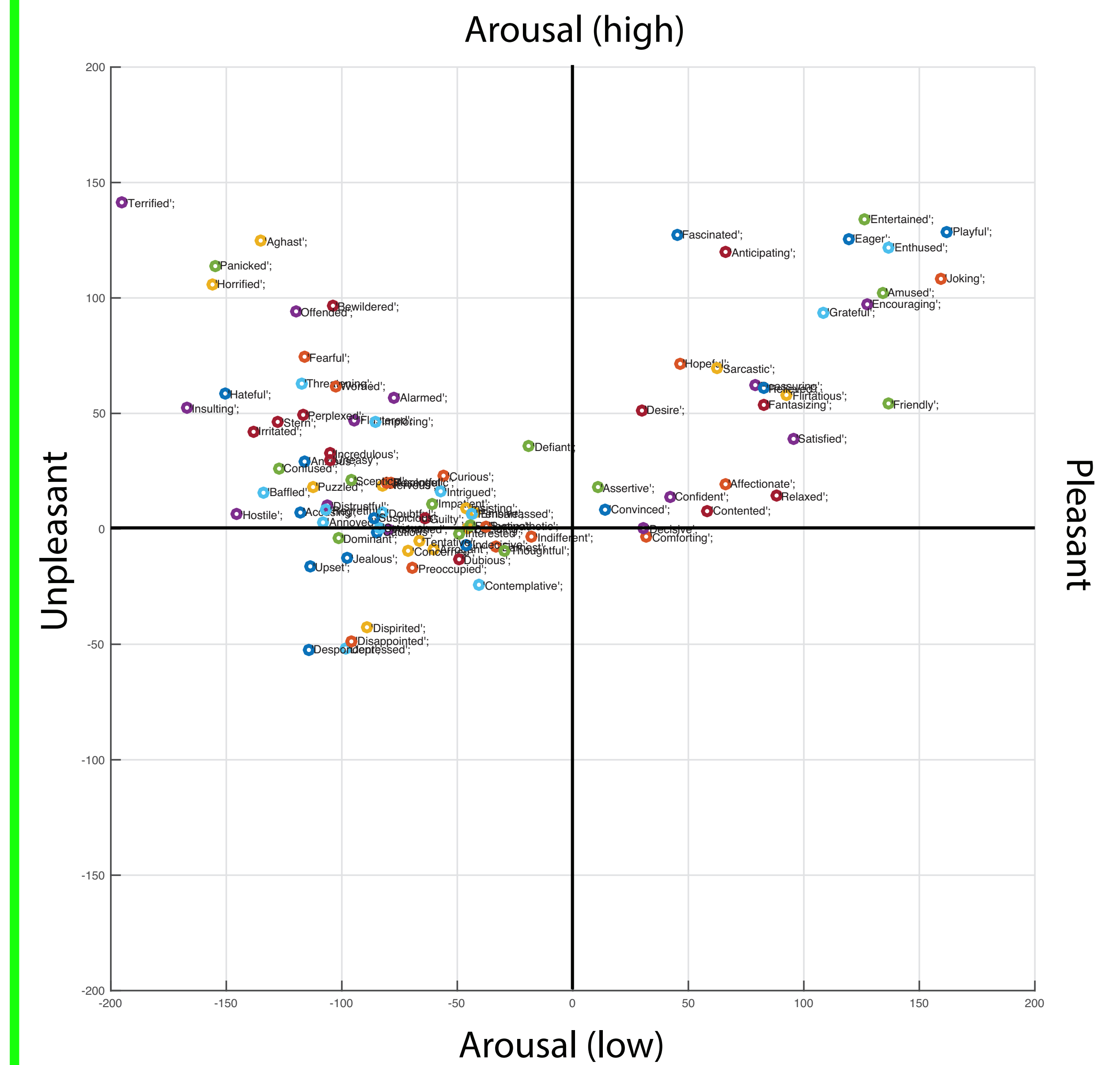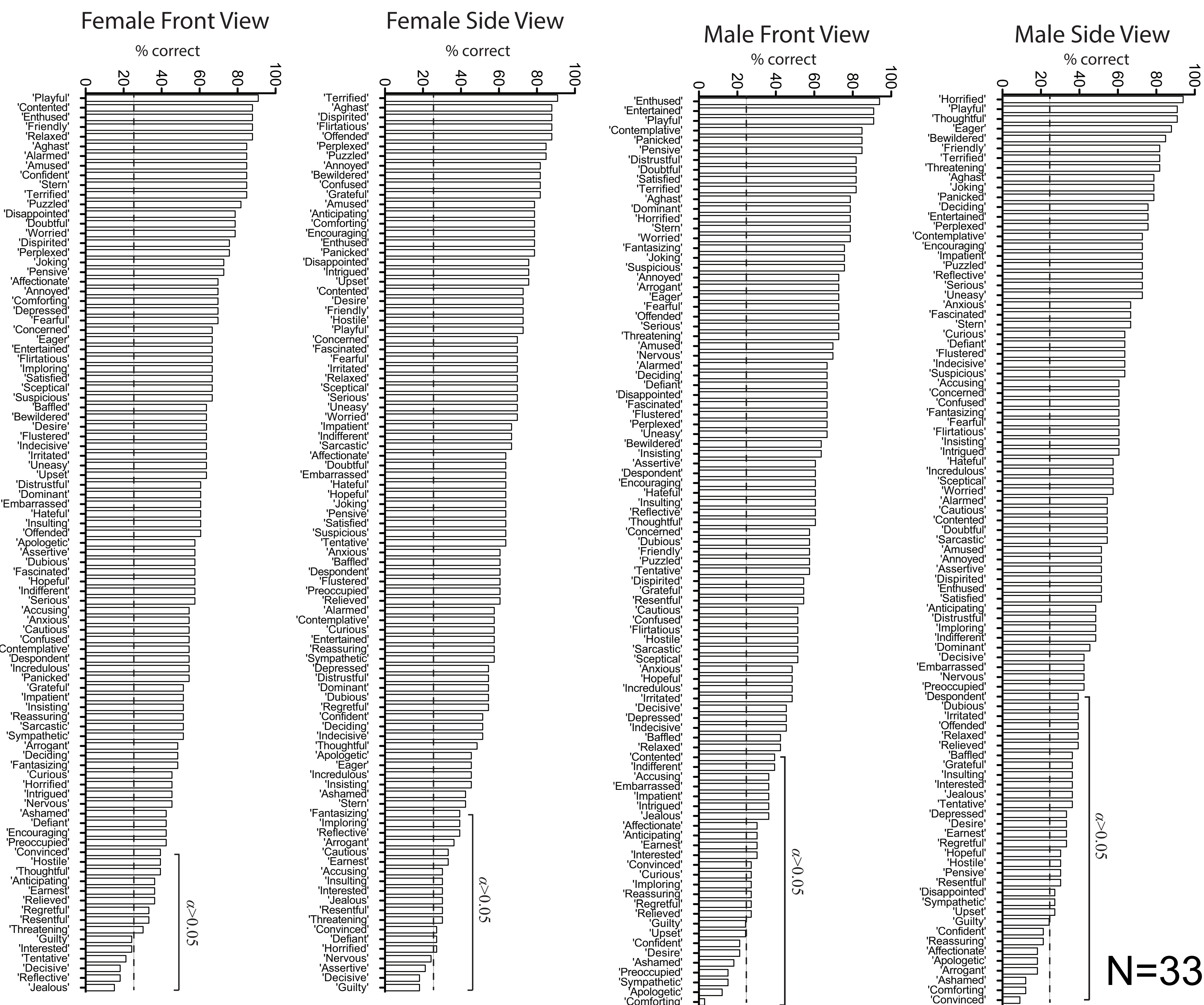- 372 pictures

Fantasizing Distrustful Arrogant Resentful
Jealous Eager Ashamed Terrified

Database

Experiment 1

Female Front View — % correct
Female Side View — % correct
Male Front View — % correct
Male Side View — % correct

$\alpha > 0.05$

N=33

Experiment 2

N=32

Arousal (high) / Arousal (low) / Unpleasant / Pleasant

Discussion

- Results show that observers can reliably recognize complex facial expressions of mental states for ~80% of mental state terms
- The ability to recognize complex facial expressions is evident if:
  1. a specific term is associated with the face
  2. subjects had to choose a position within an emotional space (Arousal-Valence Space)
- Performance is largely independent of perspective
- Subjects perform surprisingly well for faces in side view (asymmetric, much less information)
- Database is also available in German and French

Poster

- Baron-Cohen, et al. (2001). Journal of Child Psychology and Psychiatry, and Allied Disciplines, 42(2), 241–251.

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