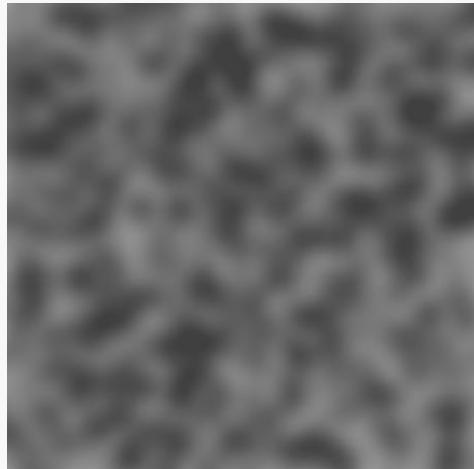
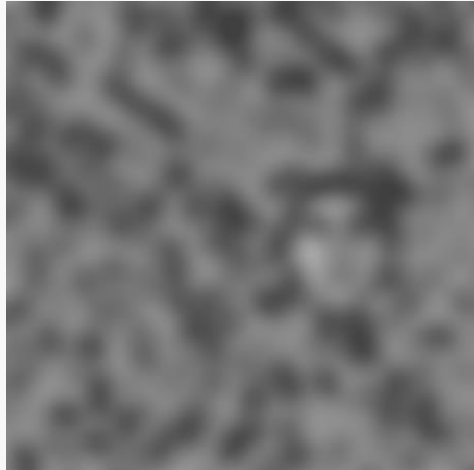

Psychosis, dopamine and signal in noise detection

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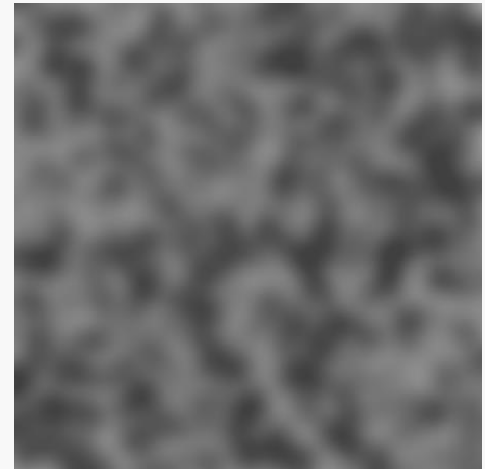
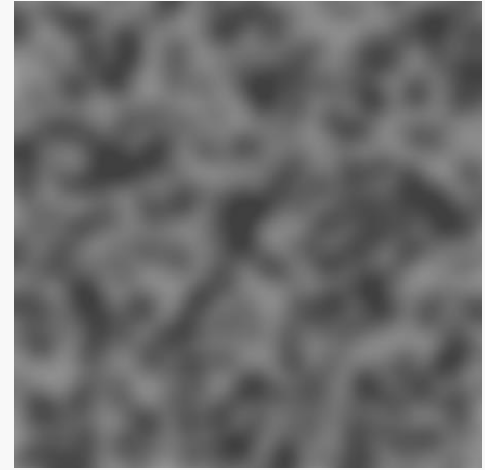
Background: Dopamine, Noise & Psychosis

- Psychotic states are characterized by decoupled / increased mesolimbic dopamine
- Dopamine is involved in the coding of salience and adjustment of signal-to-noise ratio
- Cognitive models state aberrant salience and noise detection as a core alteration in psychosis
- Goal of the proposed study is the investigation of dopamine effects on distinction between noise and salient information

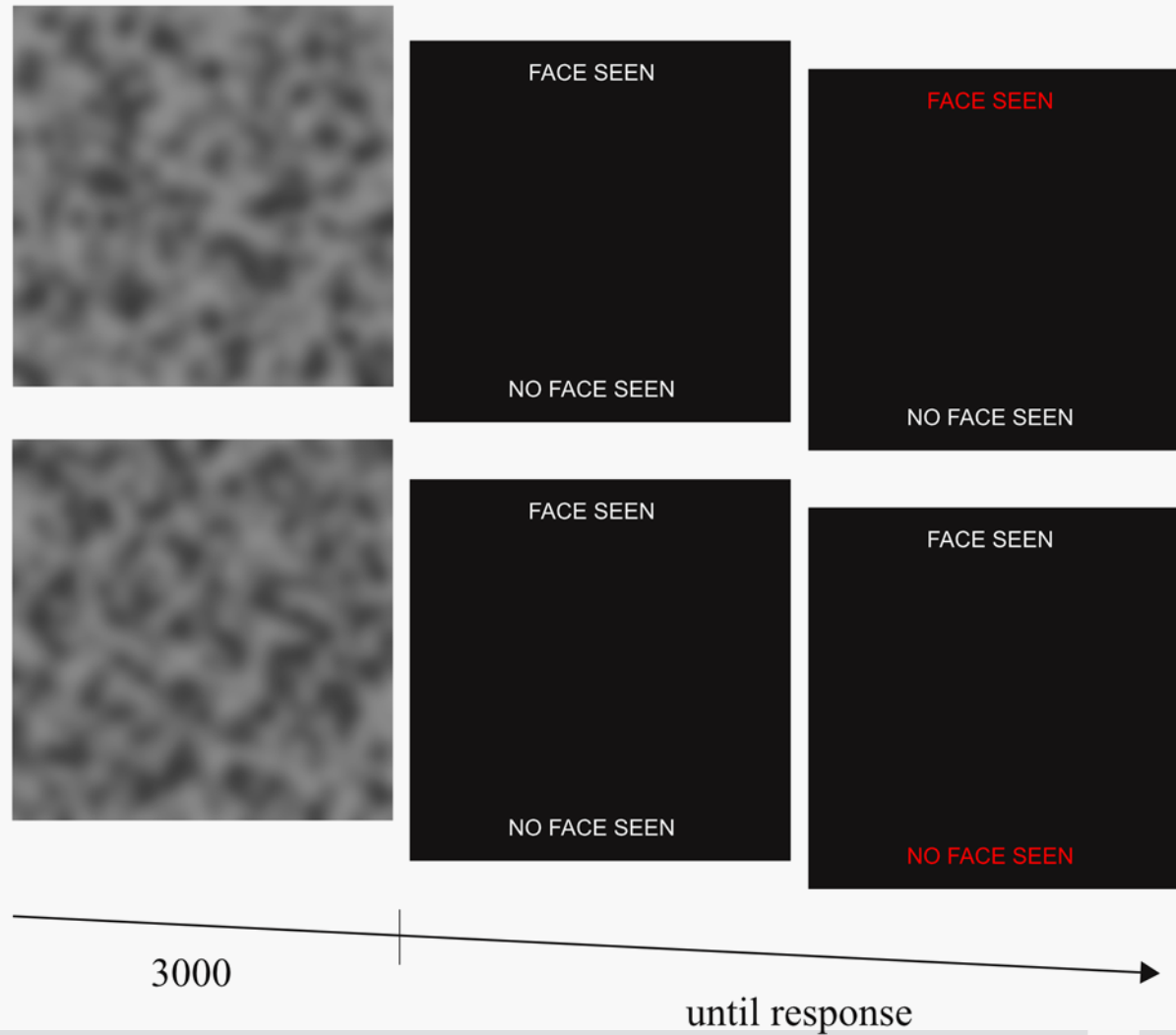
Behavioral study face task



?



Behavioral study face task



Behavioral study 1: set-up

- Forty healthy volunteers
- Correlations between face task behavior in the face task and hallucination proneness (CAPS)

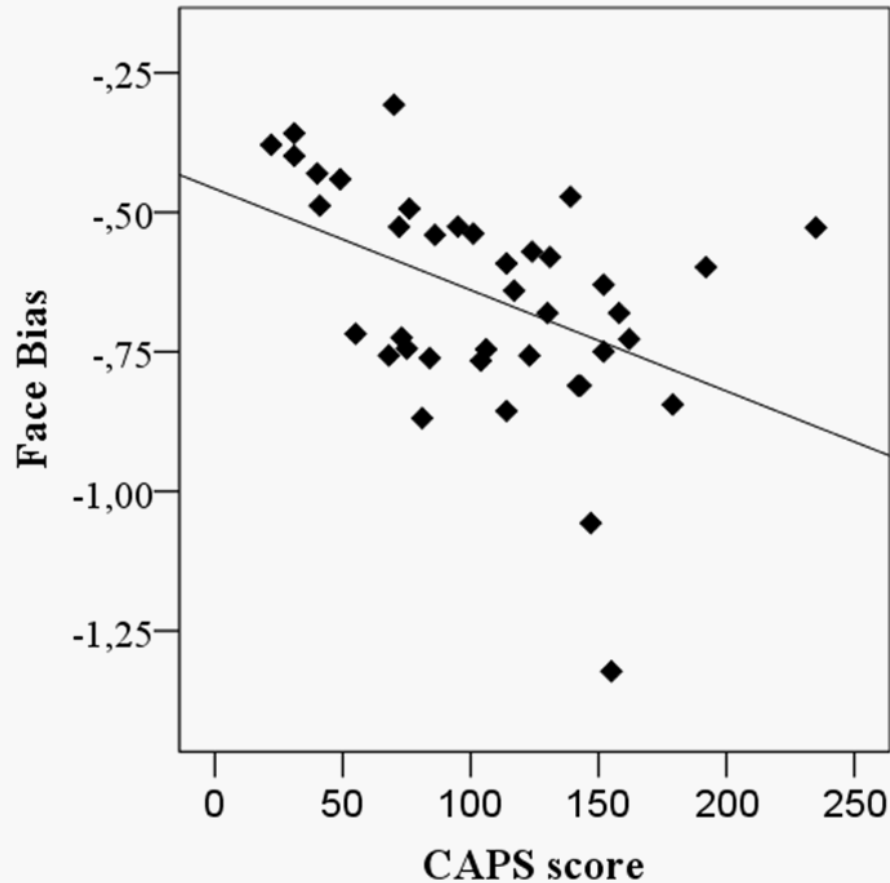
Behavioral study: analyses

	Respond "Absent"	Respond "Present"
Stimulus Present	Miss	Hit
Stimulus Absent	Correct Rejection	False Alarm

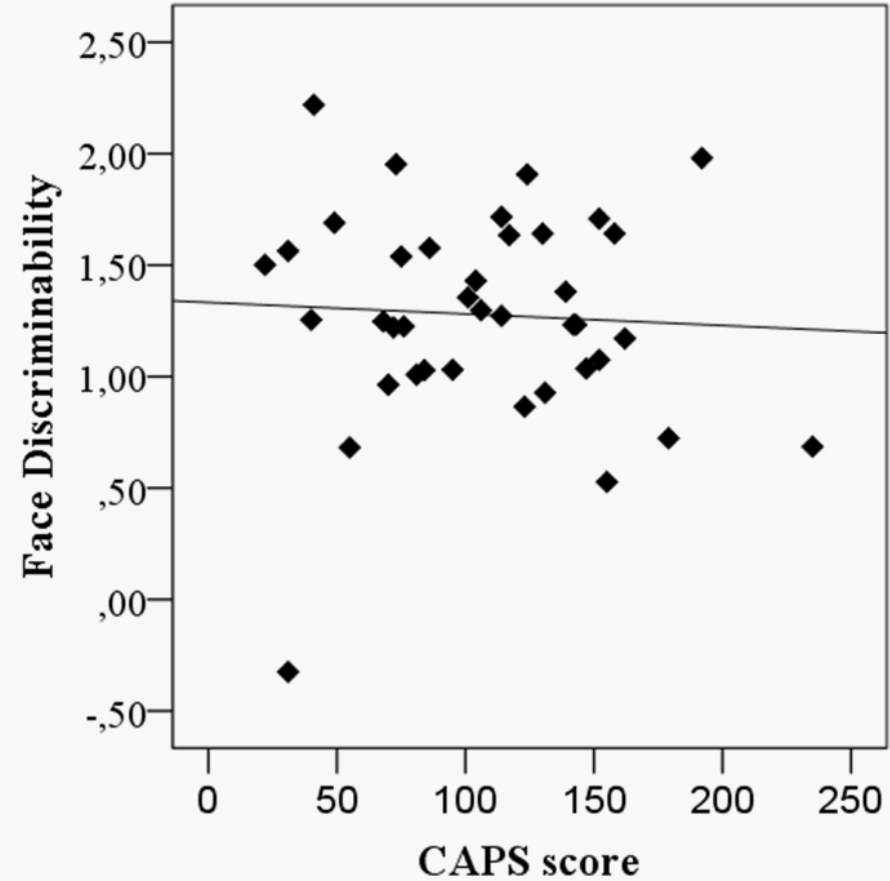
$$d' = Z(\text{hit rate}) - Z(\text{false alarm rate})$$

$$\text{bias} = -0.5 * [Z(\text{hit rate}) + Z(\text{false alarm rate})]$$

Behavioral study 1: results



$r = -0.446, p = 0.004$

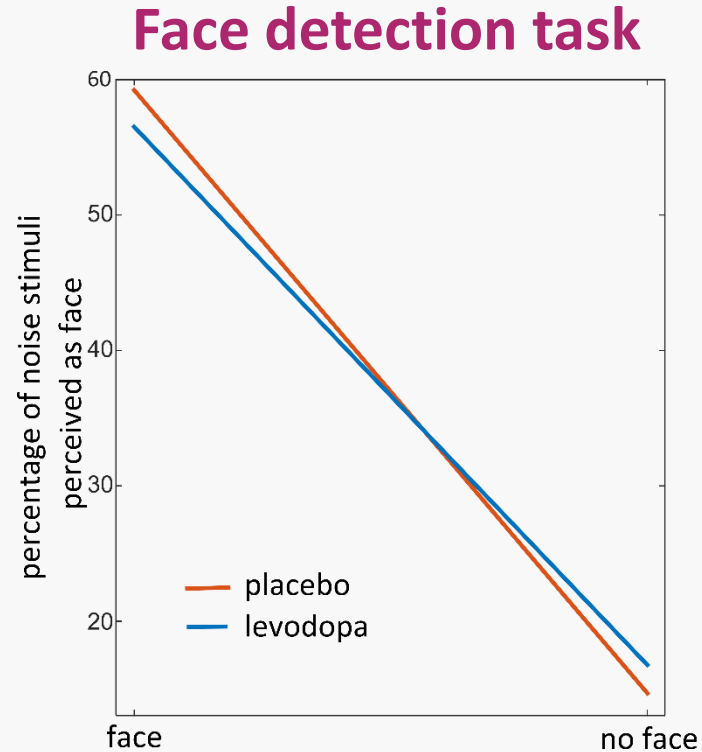


$r = -0.054, p = 0.745$

Behavioral study 2: set up

- 24 healthy volunteers
- Intrasubject comparisons L-Dopa (150 mg) vs Placebo
- Double-blind, balanced, randomized
- Signal detection theory
- Distinction between sensitivity (ability to distinguish salient from noise information) and bias (tendency towards salient interpretations)

Behavioral study 2: results



sensitivity $F = 4.4$, $p = 0.048^*$

bias $F = 0.3$, $p = 0.617$

Behavioral study 2: discussion

- Research hypothesis was shifted bias (more positives)
- Research result is decreased sensitivity (more false positives and more false negatives)
- Resembles hallucinations and delusions (more false positives)
- But also: more false negatives (negative symptoms?)