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# Neural mechanisms of encoding and maintenance of emotional faces in social anxiety disorder : An ERP study with an N-back task

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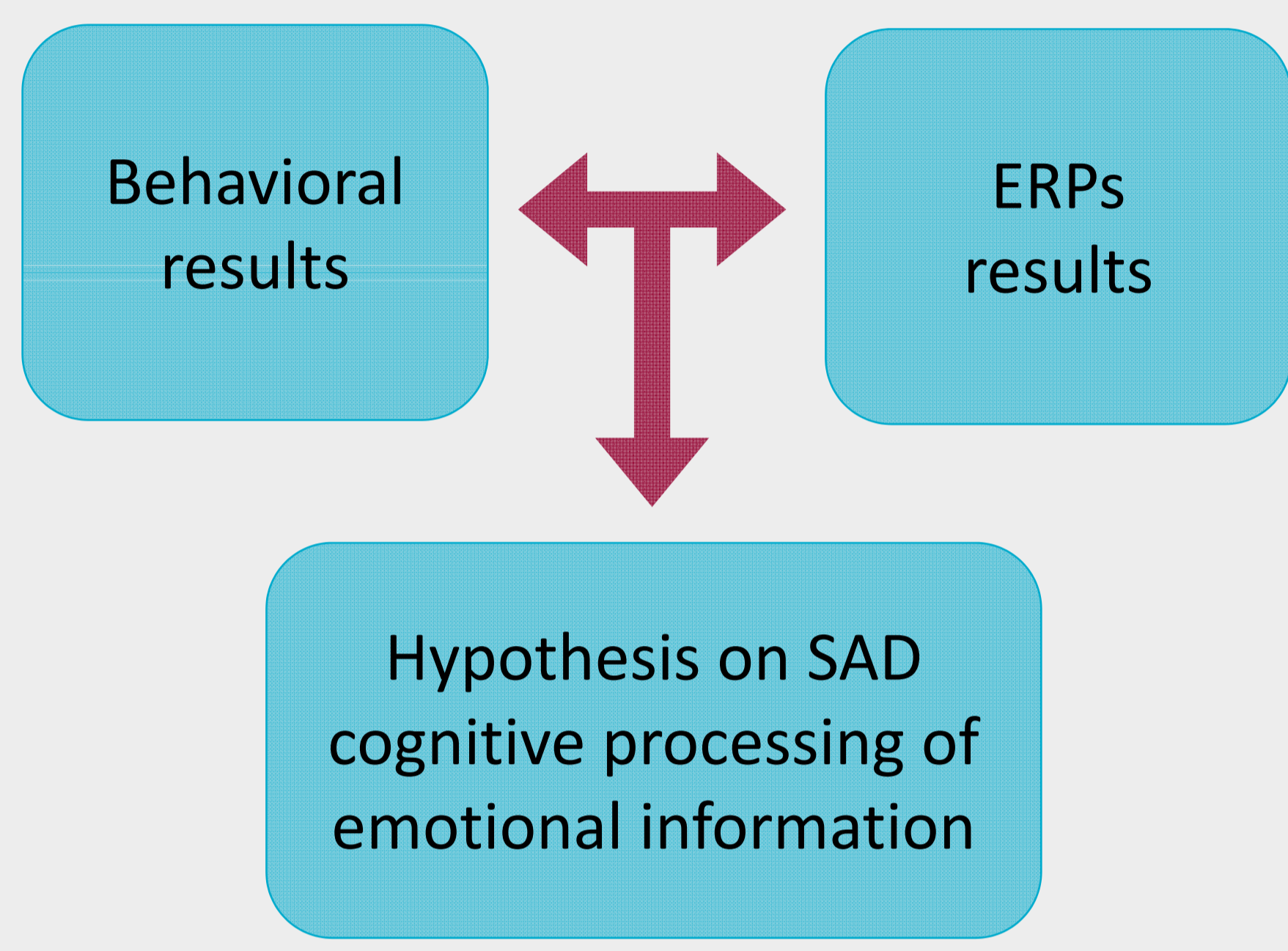
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## 1. Introduction

- Social anxiety disorder (SAD) is associated with an attentional bias (engaging or disengaging process) for threatening information, which could modulate memory stages.
- Event Related Potentials (ERPs) studies can provide a better understanding of the nature and behavioural impact of this attentional bias.

## 2. Aims



## 3. Population

48 subjects :

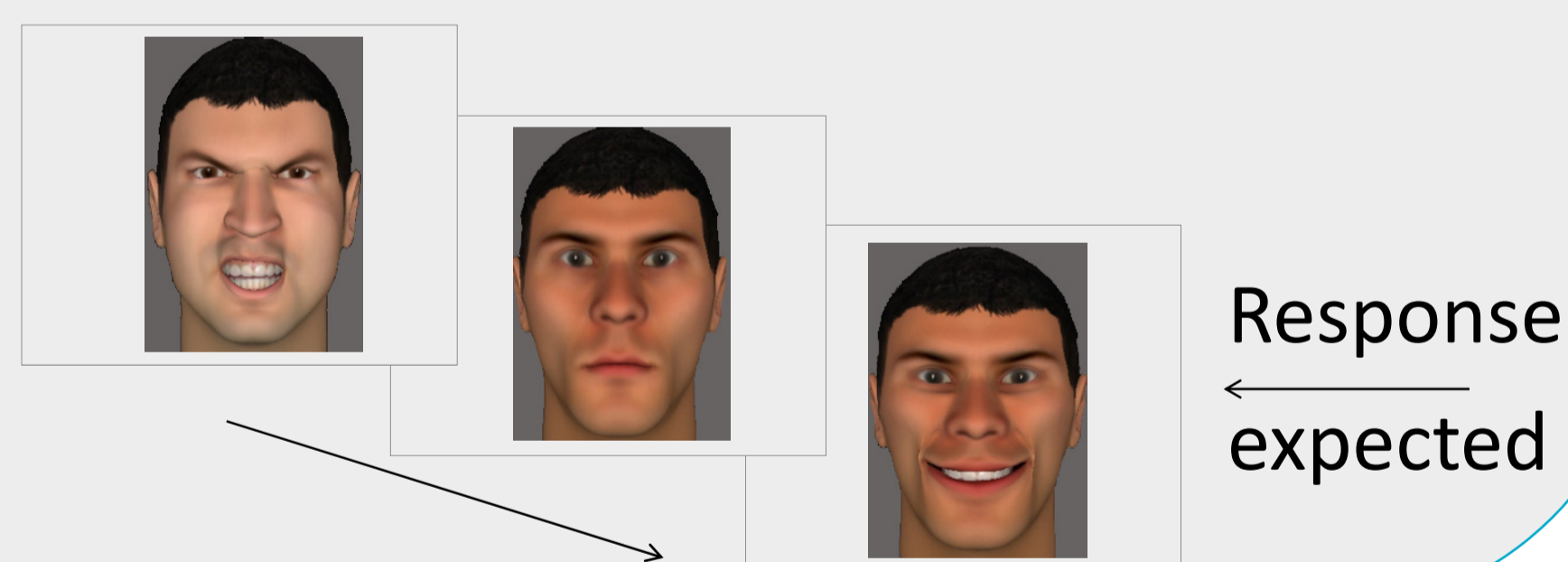
- 24 subjects SAD;
- 24 control subjects : CNTR

Test	SAD	CNTR	Sig.
LSAS	91.68	33.96	P < 0.011
Age	20.08	20.56	P < 0.001
Sex	13 ♀ 12 ♂	13 ♀ 12 ♂	χ <sup>2</sup> < 0.000

## 4. Methodology

- N-Back task :
  - Three loads (0Back, 1Back, 2Back);
  - Three different faces (X, Y, Z);
  - Three different emotions (anger, joy, neutral);
- Two conditions:
  - « Emotion » (the target stimulus is a facial emotion);
  - « Identity » (the target stimulus is the identity of the face showed, despite of its emotion). Example :

ISI = 1000 ms  
 Presentation time = 500 ms



## 6. Discussion

The SAD group present a **modulation of early stages of the visual processing** :

- Larger P100 in SAD group for emotional condition = deeper visual processing for emotional information (Rossignol & al. 2012).  
 → Top-down modulation by emotion : SAD subjects allocate more attentional resources to encode emotional information;

Attentional bias in SAD group = **bottom-up modulation by angry faces (AF)** :

- Larger LPP for AF = more sustained attention for those targets; and slower RT for AF;
- SAD subjects could need more time to disengage their attention from AF and start the behavioural response.

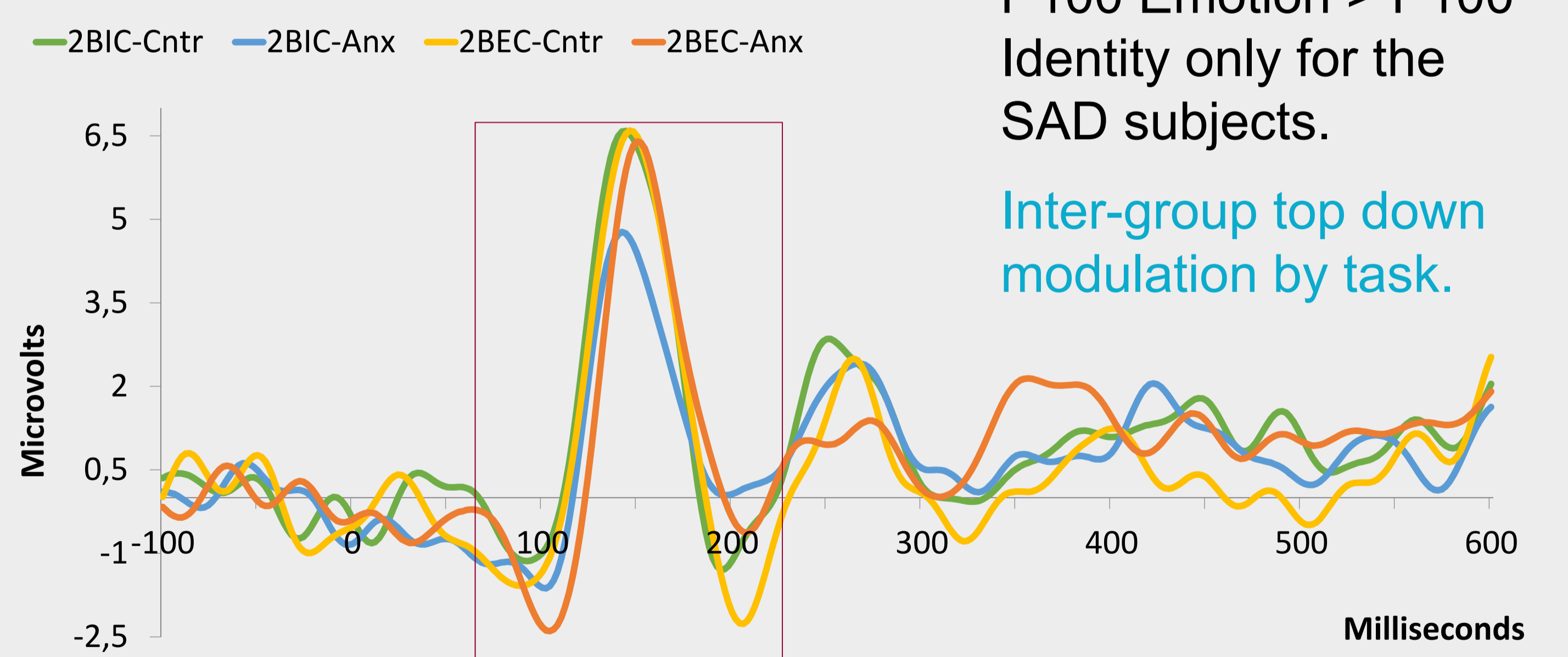
## 5. Results

**Group\*Emotion on reaction time**  
 $F(2,90) = 2.925; p = 0.059$

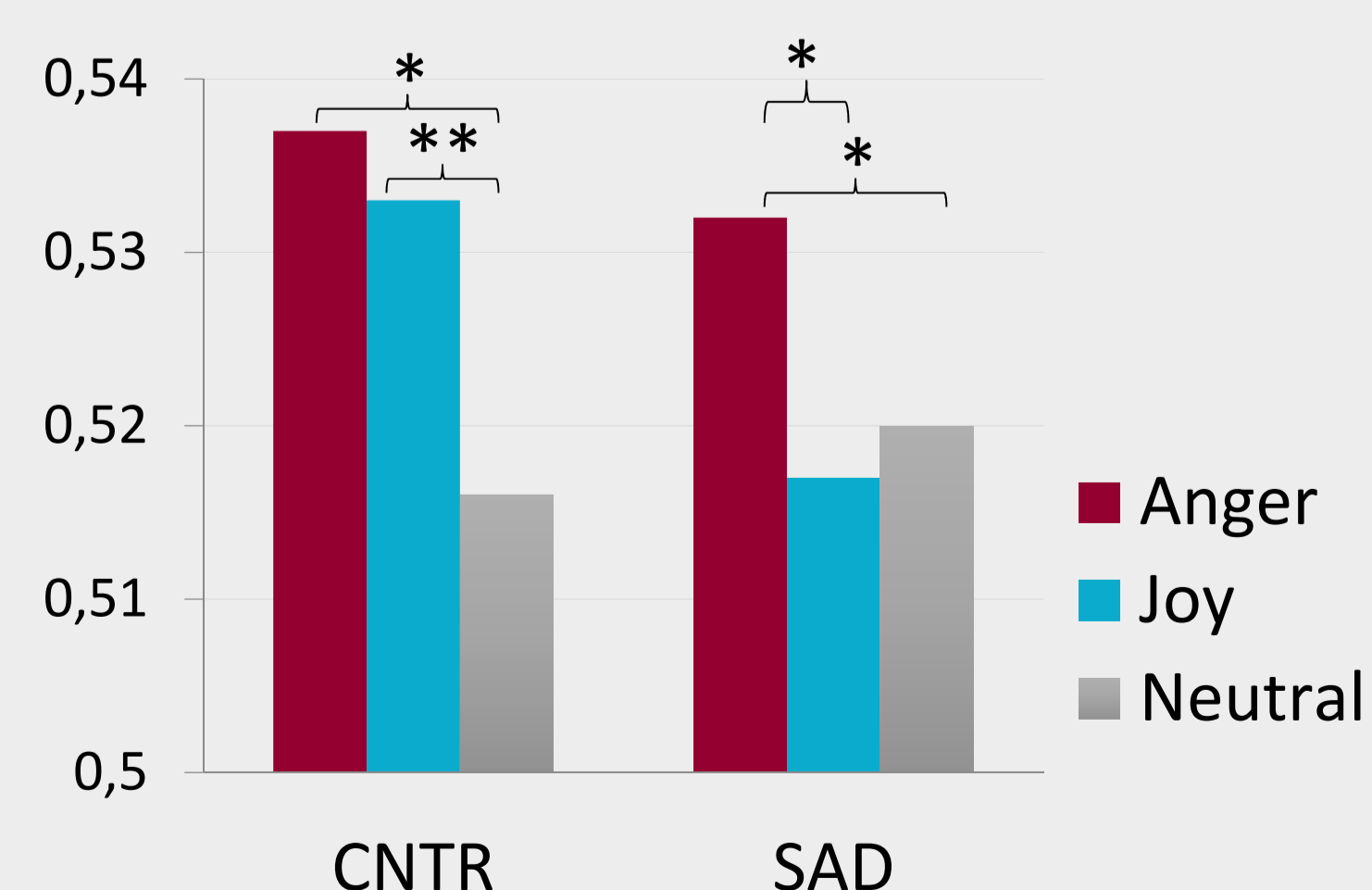
- RT CNTR > RT SAD;
- In SAD group : RT anger > RT Joy and neutral

Bottom up modulations :  
 - Intra-group by group  
 - Inter-group (SAD) by emotion

**Task\*Group on P100 amplitude (Oz)**  
 $F(1,25) = 6.313; p = 0.019$



**Group\*Emotion on LPP latency**  
 $F(2,50) = 6.862; p = 0.005$



- Neutral ≠ from others in the CNTR group;
- Anger ≠ from others in the SAD group.