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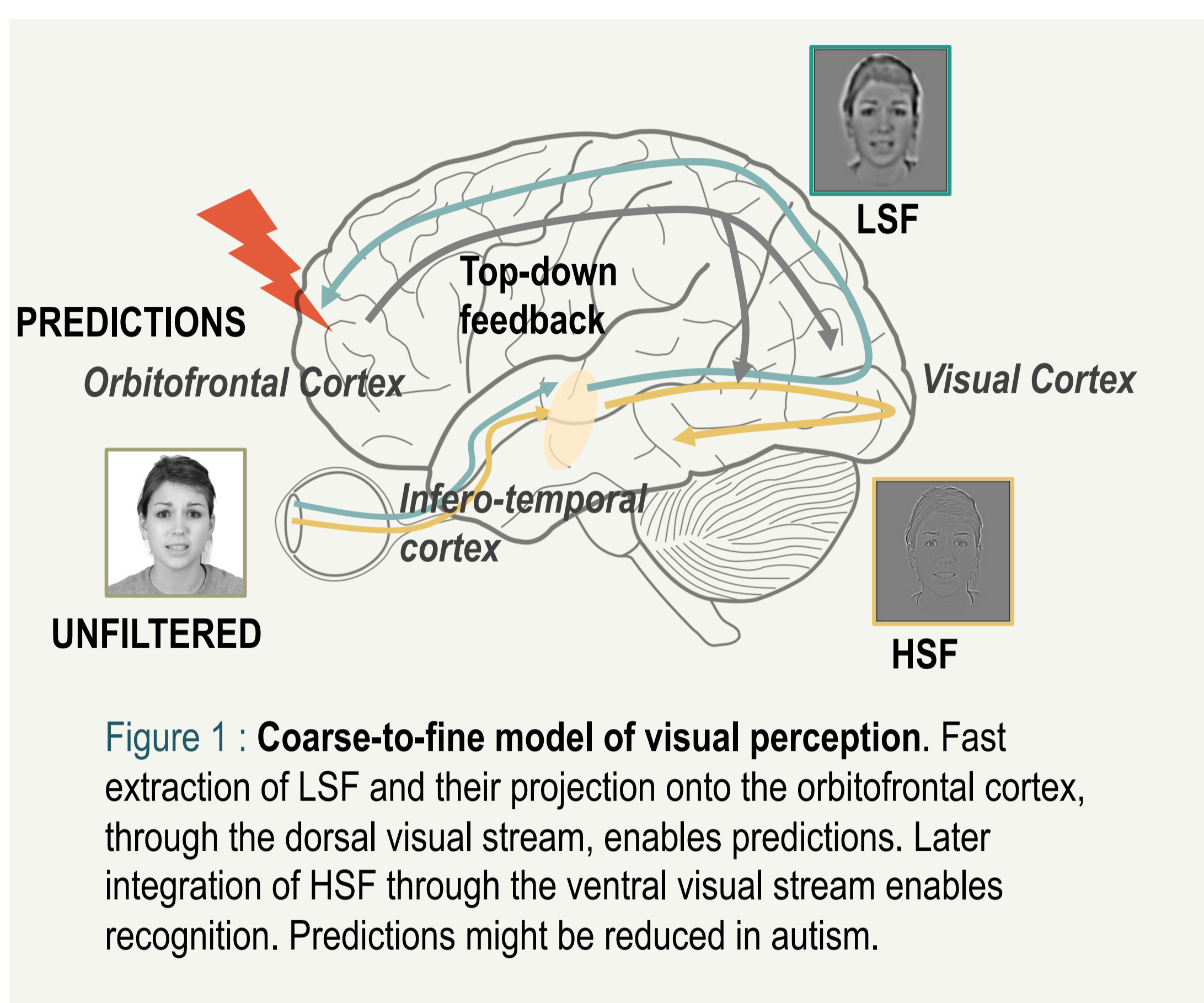
IS THE COARSE-TO-FINE PROCESSING OF FEARFUL FACE IMPAIRED IN AUTISM ?

The dissociation between the neural and the behavioral response

Adeline Lacroix^a, Sylvain Harquela^{a,b}, Klara Kovarski^{c,d}, Leonardo Barbosa^{a,e}, Marta Garrido^{f,g}, Laurent Vercueil^a, Louise Kauffmann^a, Frédéric Duthell^h, Marie Gomotⁱ, & Martial Mermillod^a

1 INTRODUCTION

- Visual perception is thought to be coarse-to-fine, with early processing of global information from low spatial frequencies, followed by detailed information processing from high spatial frequencies (Figure 1)¹.
- Autistic individuals have a visual perception more oriented toward local information, which might partly explain their difficulties in face processing at the behavioral level².
- However, electrophysiological investigation of spatial frequency processing of faces in autistic children lead to mixed results^{3,4} and no study investigated it in autistic adults.



Hypothèse :

- Local bias in the visual perception of autistic adults would disrupt the coarse-to-fine processing of emotional faces (electrophysiological level)
- This would lead to emotion recognition impairment (behavioral level)

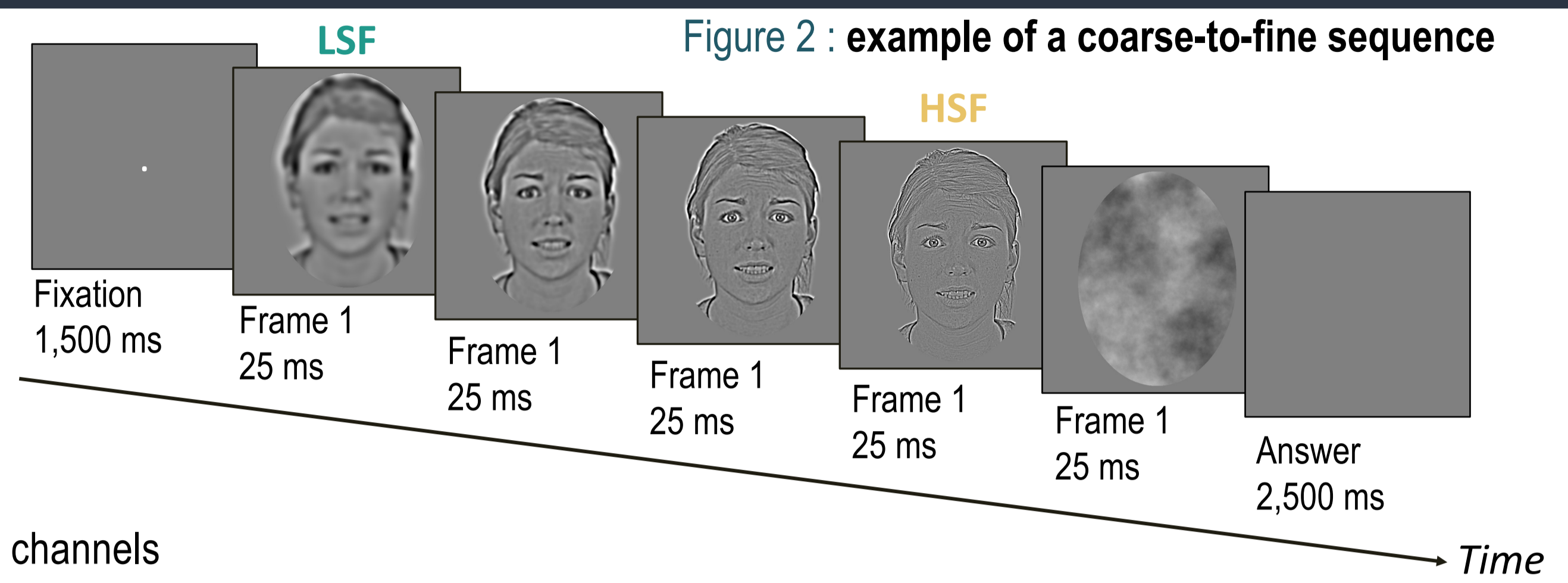
4 DISCUSSION

- Electrophysiological data are consistent with coarse-to-fine processing of fearful faces: there is a faster P100 for CtF sequences, in line with early processing of LSF, whereas the N170, a slightly later component, is faster and larger for FtC sequences.
- Contrary to our hypothesis, CtF processing seems intact in autistic adults, despite impaired fearful detection (longer response time, lower d').

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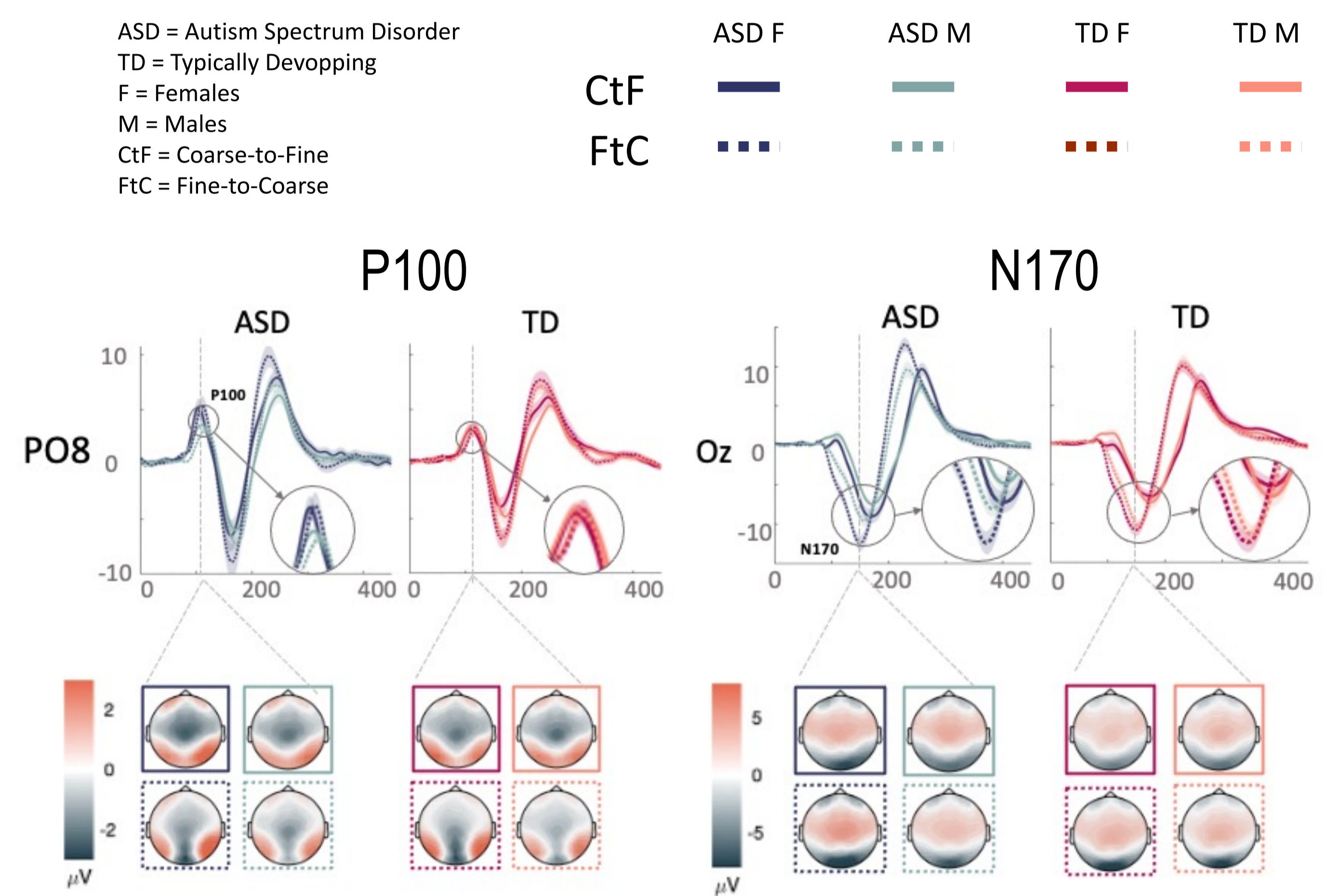
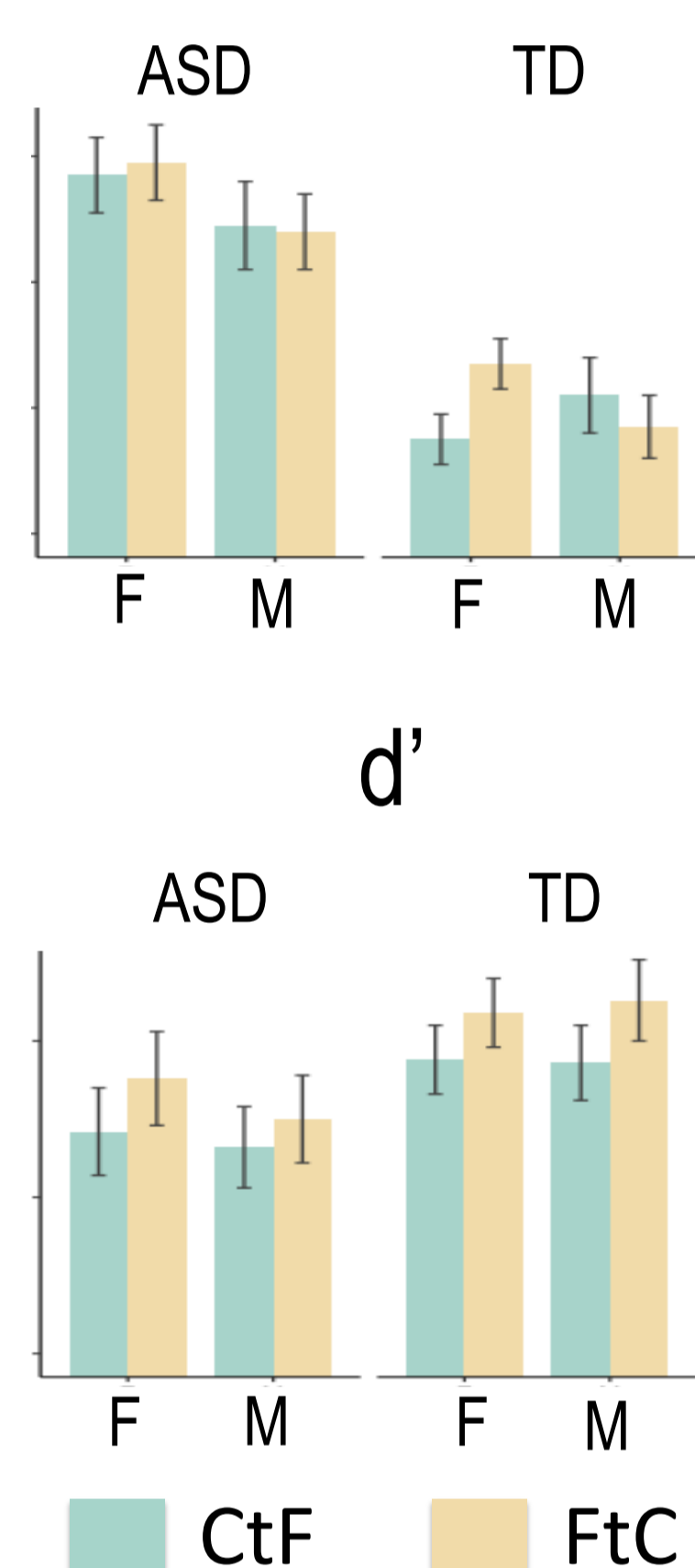
2 METHOD



- EEG, 96 channels
- Task : detection of fearful faces among neutral faces
- Conditions : Coarse-to-Fine (CtF; from low to high spatial frequencies) and Fine-to-Coarse (FtC; from high to Low Spatial Frequencies)
- Investigation of the **electrophysiological** response (P100, N170) and the **behavioral** response (d', response time)
- Participants: 51 typically developed participants (27 females) and 44 autistic participants (22 females) were recruited, matched on age (Mean Age = 30) and IQ (mean Full Scale IQ = 117).

3 RESULTS

Response Time



→ Findings suggest that difficulties for autistic adults to process emotional faces are related to higher order processing than primary visual processing.



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