UNIVERSITÀ DEGLI STUDI FIRENZE
NEUROFARBA
DIPARTIMENTO DI NEUROSCIENZE, PSICOLOGIA, AREA DEL FARMACO E SALUTE DEL BAMBINO

UNIVERSITÉ DE FRIBOURG
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Face race modulates inhibitory efficiency

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Face race processing

Race is an information that we quickly extrapolate from **faces**

Other-Race Categorization Advantage (ORCA)

OTHER-RACE (OR)

SAME-RACE (SR)

Study aim

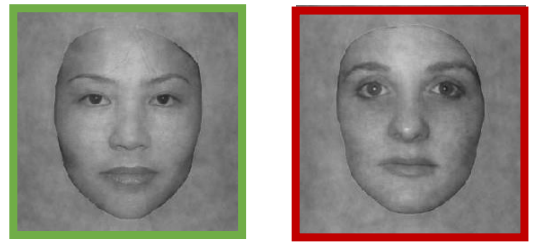
- Little is known about its interaction with **inhibitory control**
- Executive function that allow us to stop in response to external signals

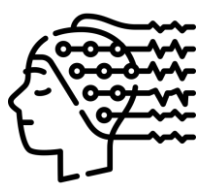
Can face race modulate inhibitory efficiency?

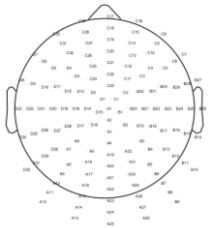
(Feingold, 1914; Valentine, 1991; Serafini & Pesciarelli, 2023)

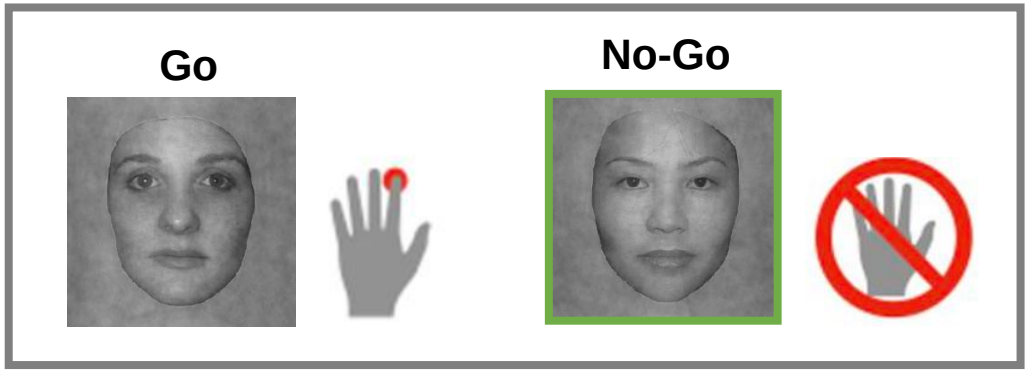
Methods

- **Participants:** 30 Western Caucasian observers
- **Paradigm:** Go/No-Go Task → inhibitory
- **Face stimuli:** 10 Asian (EA) and 10 Caucasian (WC) faces
- **EEG registration:** 128 ch



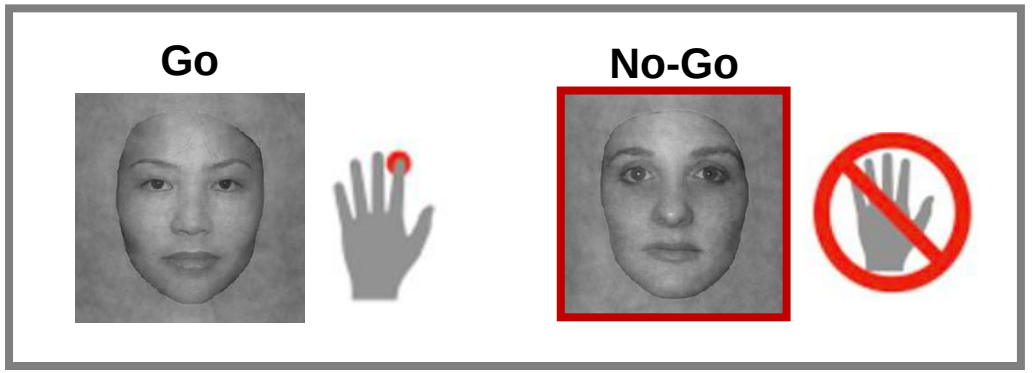






No-Go = Other-Race

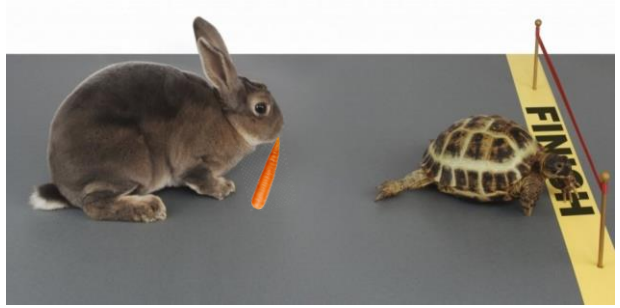
✓Categorization
Better inhibition?



No-Go = Same-Race

Categorization
Worse inhibition?

Behavioural results



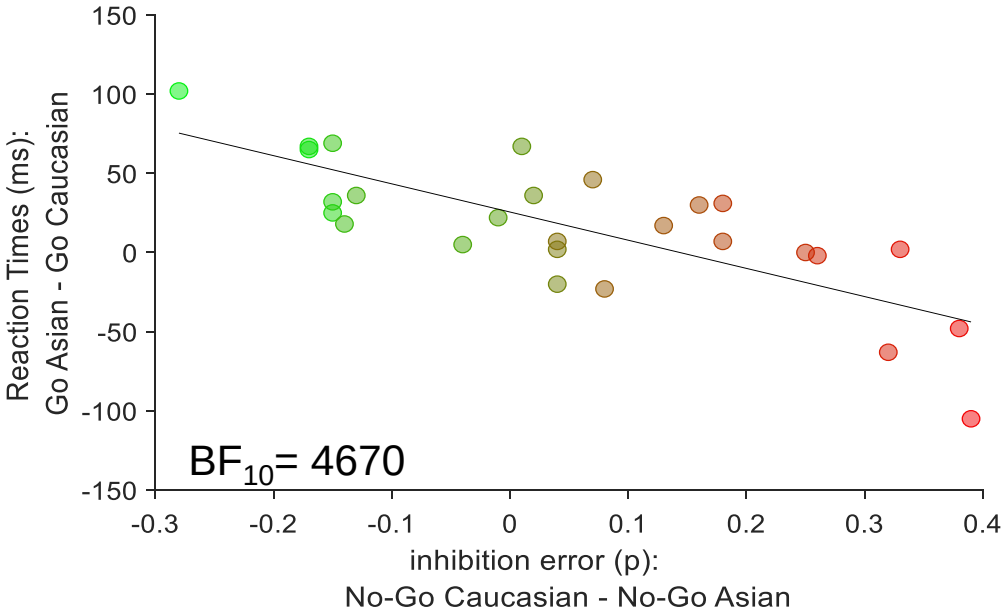
Speed-accuracy trade-off

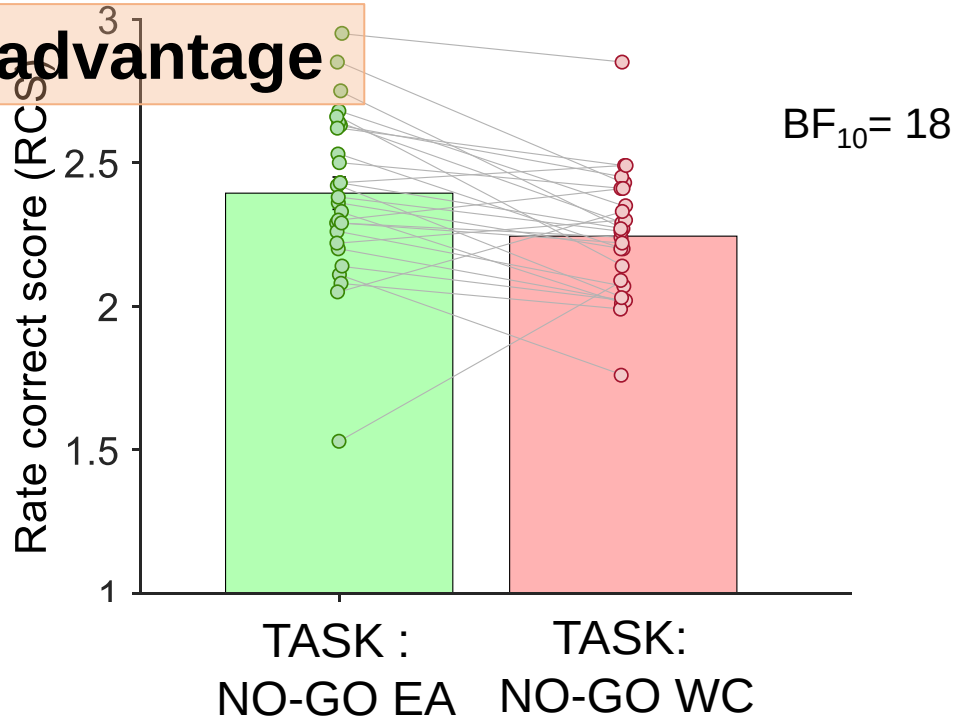
Overall cognitive cost: the Rate Correct Score (RCS)

Same-race faces → **< errors**

Same-race faces → **> RTs**

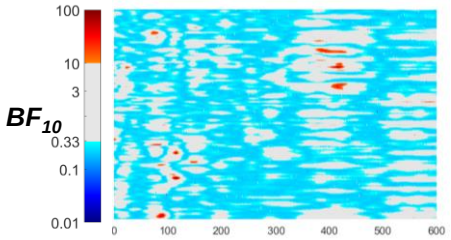
Other-race inhibitory advantage





BF_{10}= 18

EEG Results



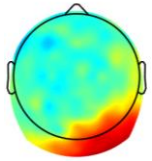
30 ms

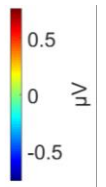
onset

BF10 across time

Face race effect

104 – 115 ms





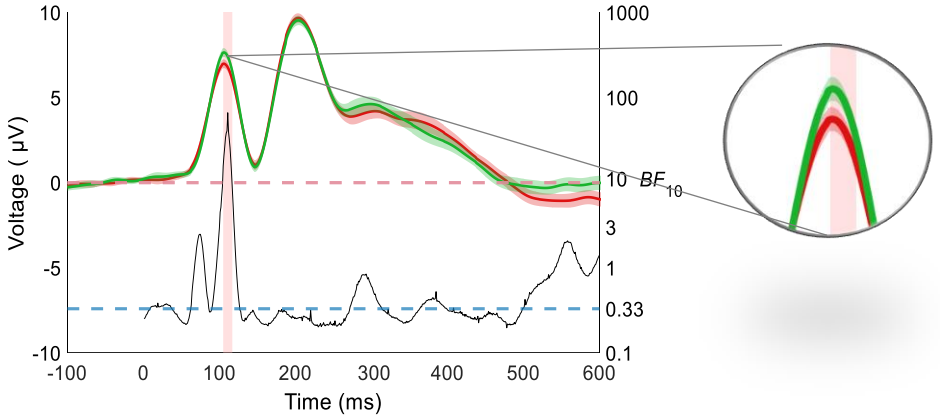
BF10 > 10

BF10

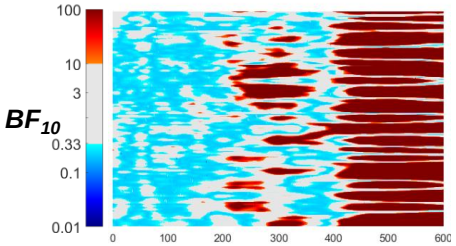
EA faces

WC faces

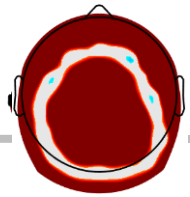
600 ms



Face race on P100



BF10 across time

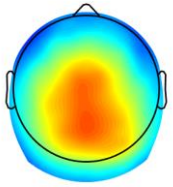


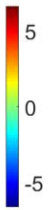
Task condition effect

onset

600 ms

388 – 600 ms



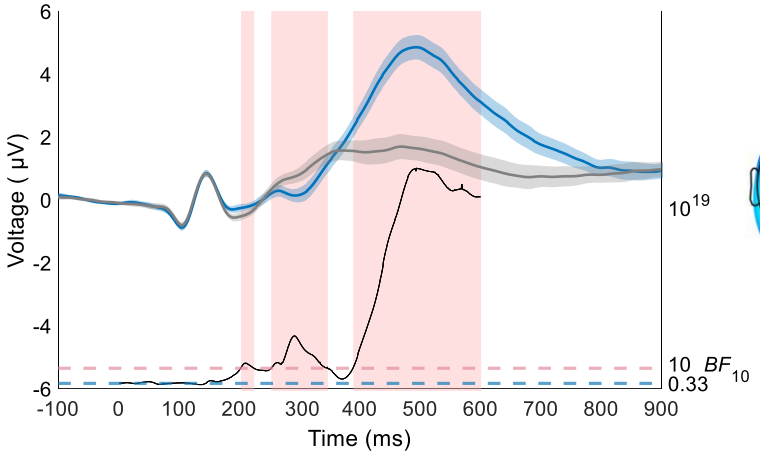


GO

BF10 > 10

BF10

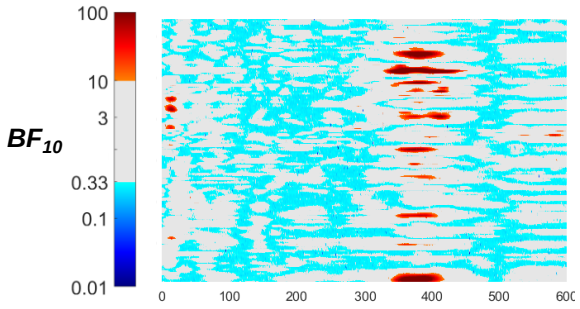
NO-GO

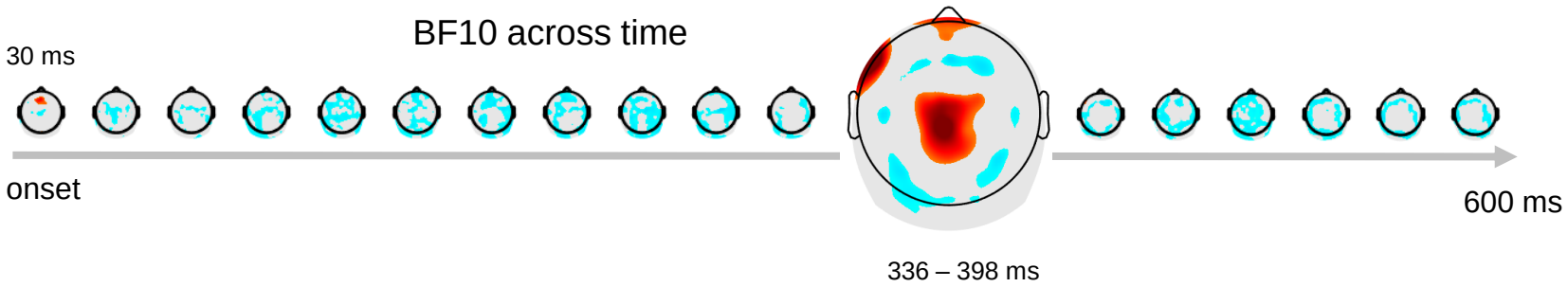


Post perceptual effect: NO-GO P3

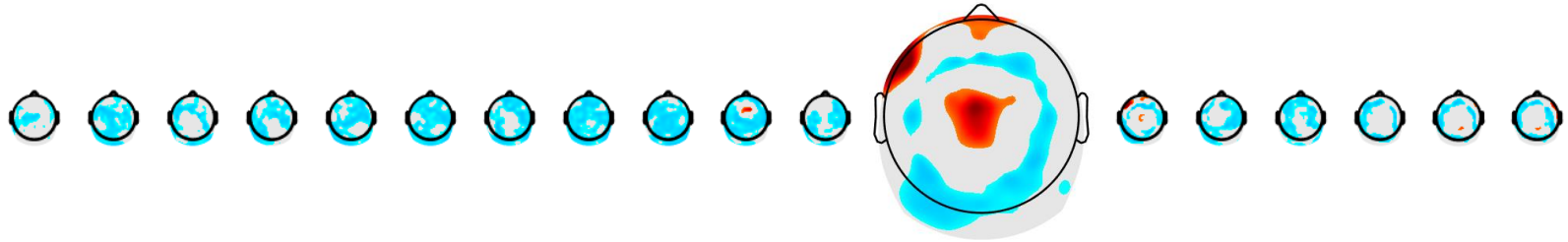
EEG Results

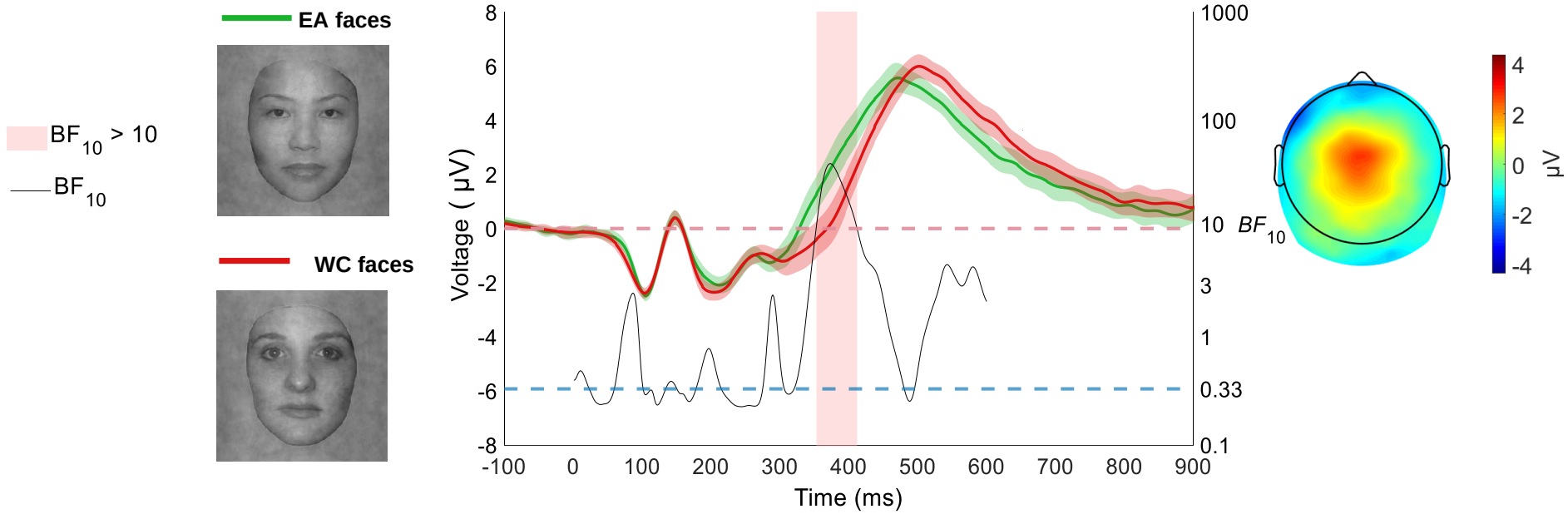
Interaction between face race & task condition





NO-GO comparison





Face race effect on the NO-GO P3

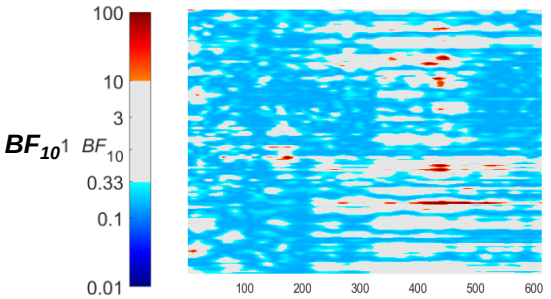
EEG Results

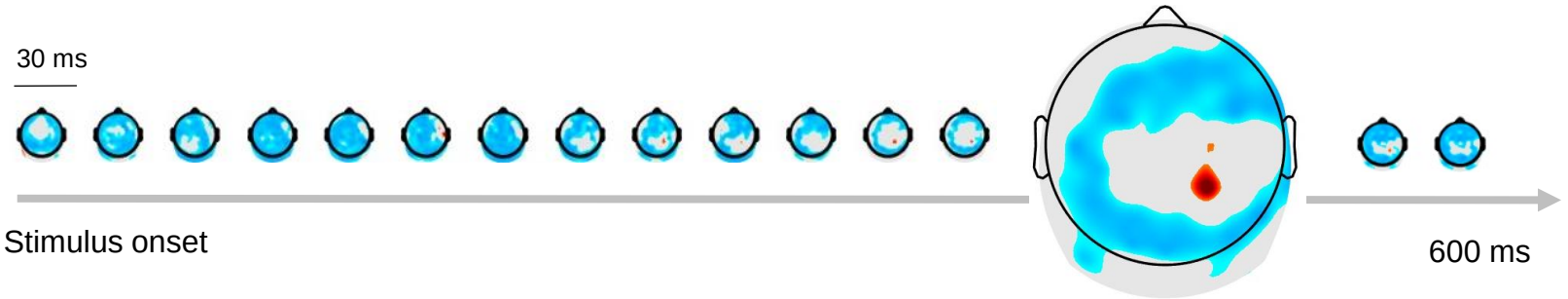
Neural & Behavioural link

correlation
Race effect magnitude

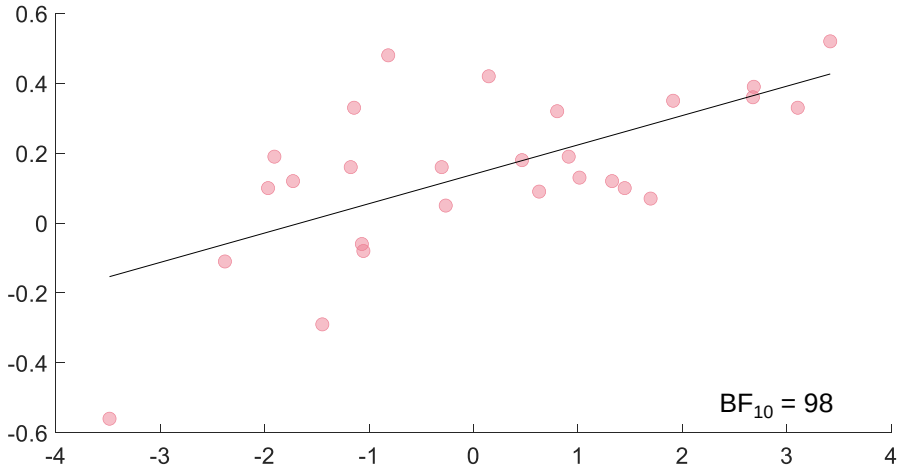
= Δ RCS (EA – WC)

= Δ NO-GO voltage (EA – WC)

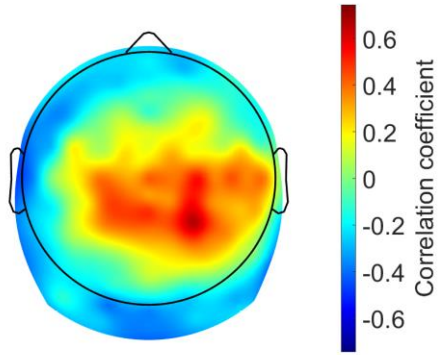




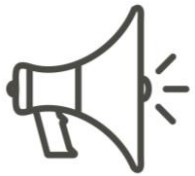
Behaviour consistent with neural response



386 – 535 ms



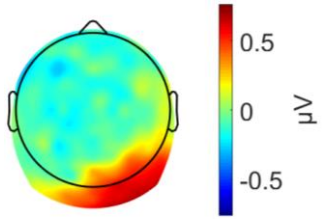
Sum-up and conclusions



Other-Race Inhibition Advantage

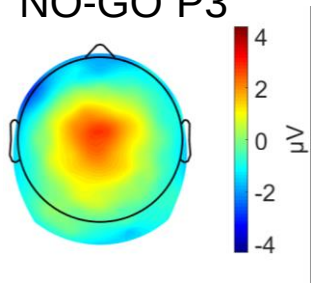
- Early perceptual electrophysiological differences between races

P100



- Difference in the response inhibition component between races

NO-GO P3



- **Face race modulates response inhibition**
- **Cross-cultural? We'll see.**

Acknowledgment

Prof. Viggiano

Prof. Giovannelli

Dr. Gavazzi

Prof. Caldara

Dr. De Lissa

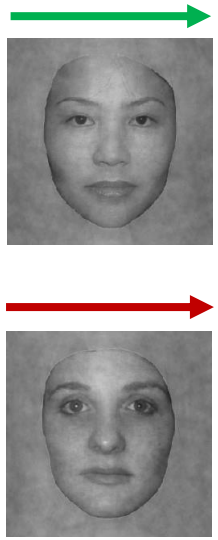
COGPSY Lab

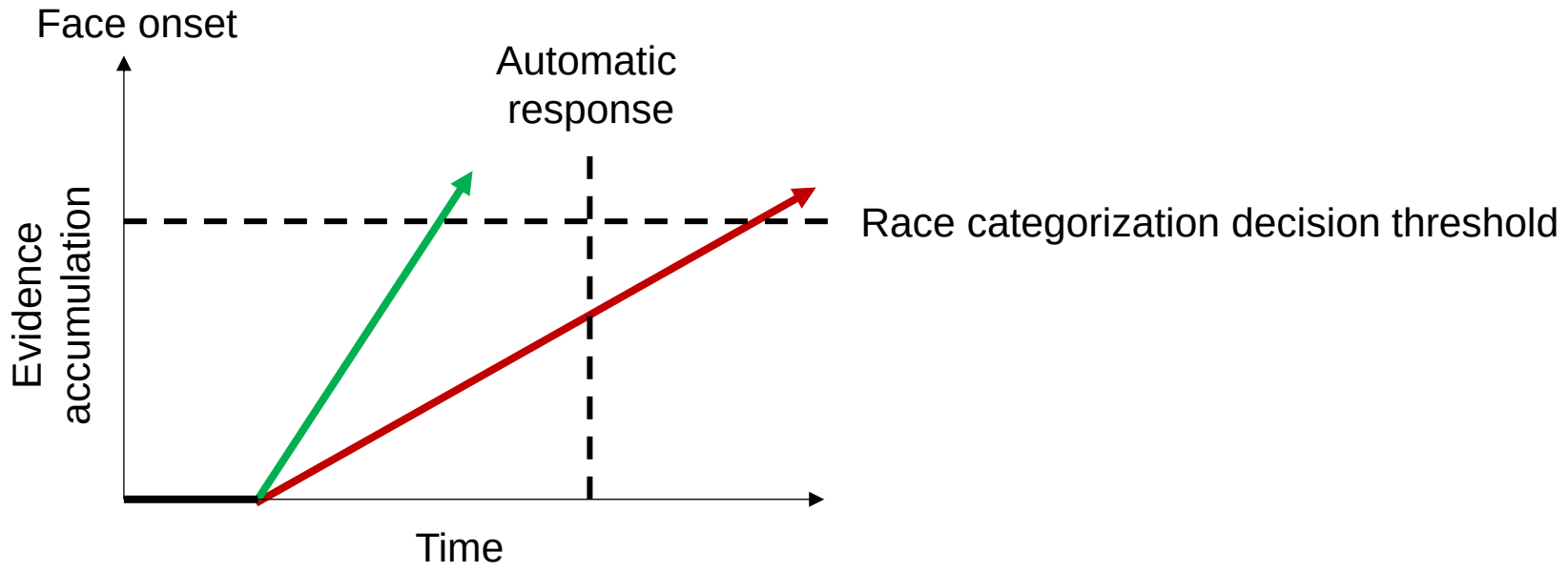
Thank you !

iBMLAB
Eye and Brain Mapping Laboratory

Study: **Conclusion**

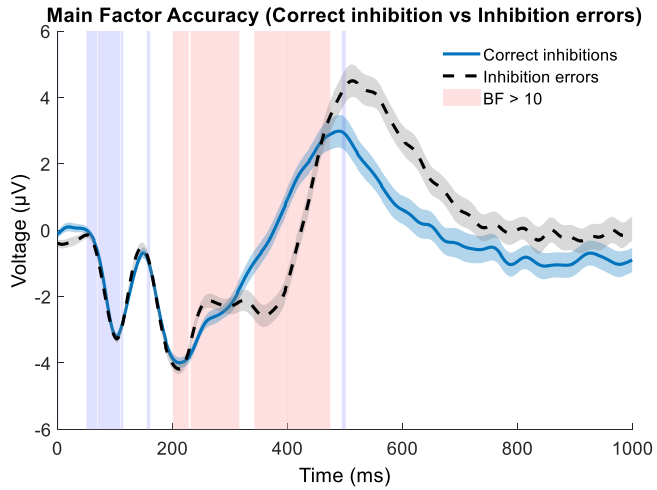
Interpretation and final remarks

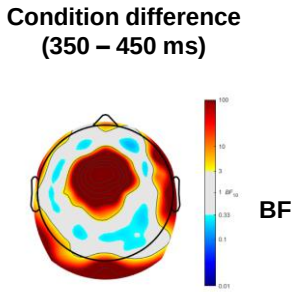


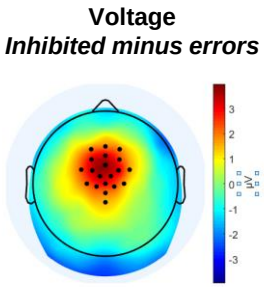


A) Main effect: ACCURACY

Regardless of the ethnicity of the faces, the LPP differs between correctly inhibited responses and inhibition errors. This finding corroborate literature on the topic.

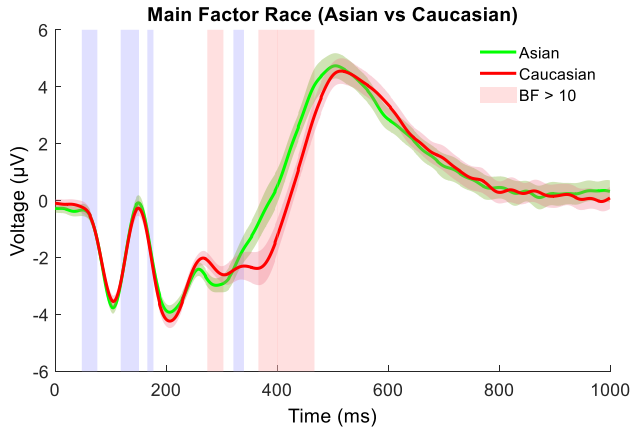


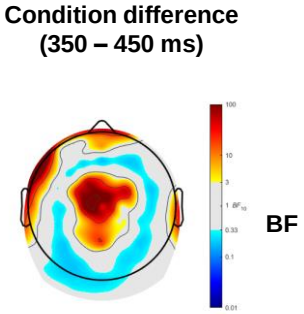


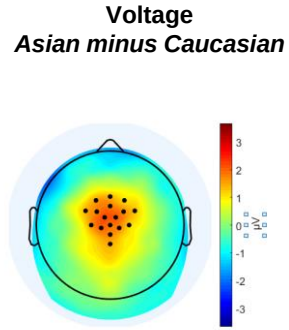


A) Main effect: RACE

the LPP differs between correctly inhibited responses and inhibition errors. This finding corroborate literature on the topic.

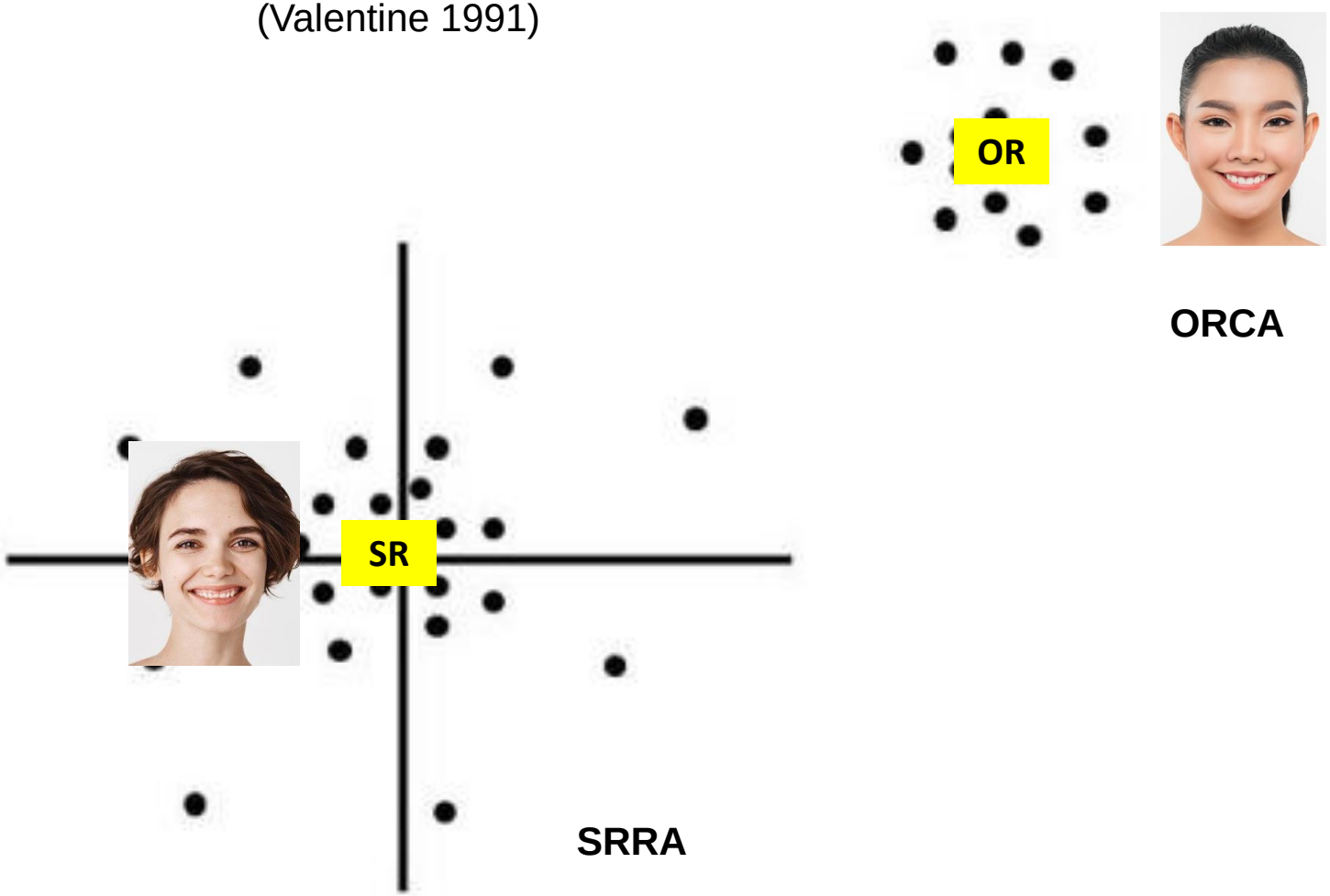






Inhibition and Face-Race: **other-race effects**

Multidimensional Face Space Model
(Valentine 1991)



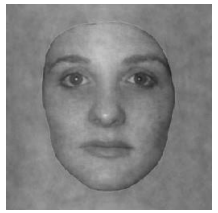
Computational statistical evidence
(Caldara & Abdi, 2006; Furl et al., 2010)

EEG Results

interaction

EA faces

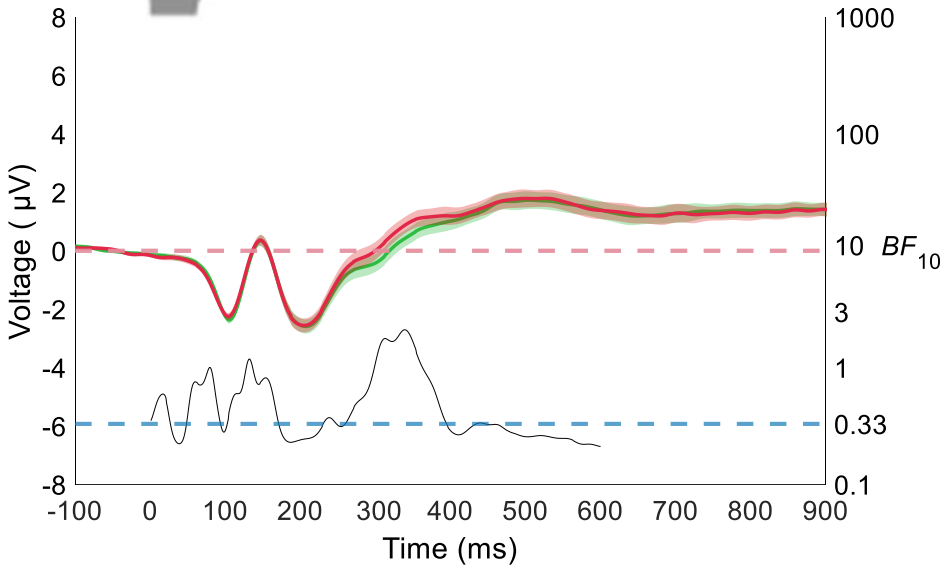
WC faces

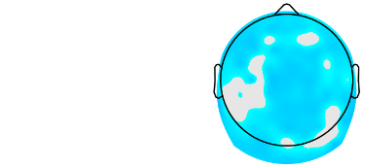


BF_{10} > 10

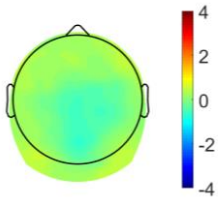
BF_{10}

GO

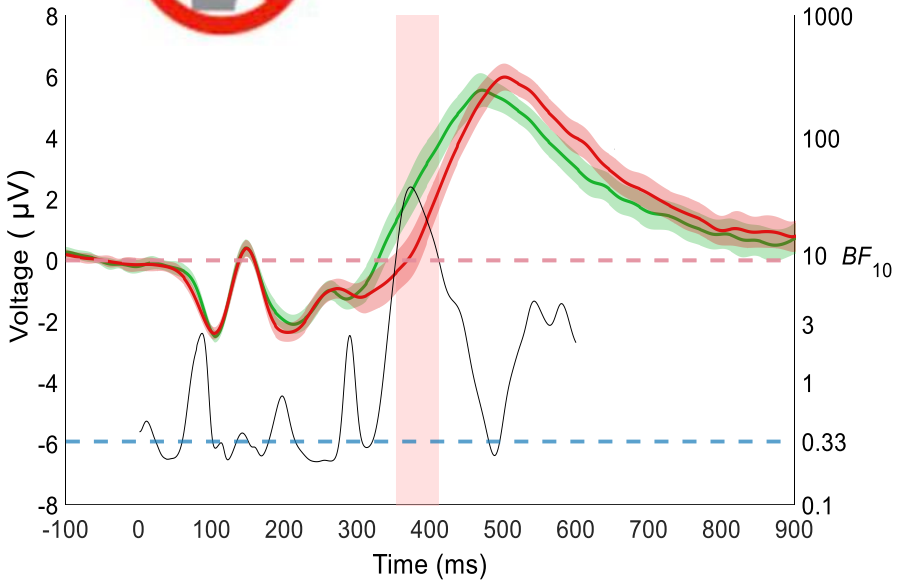




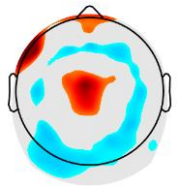
336 – 398 ms



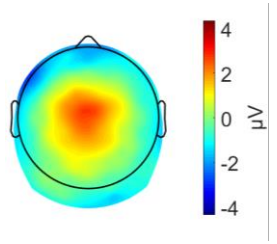
NO - GO



Inhibitory condition

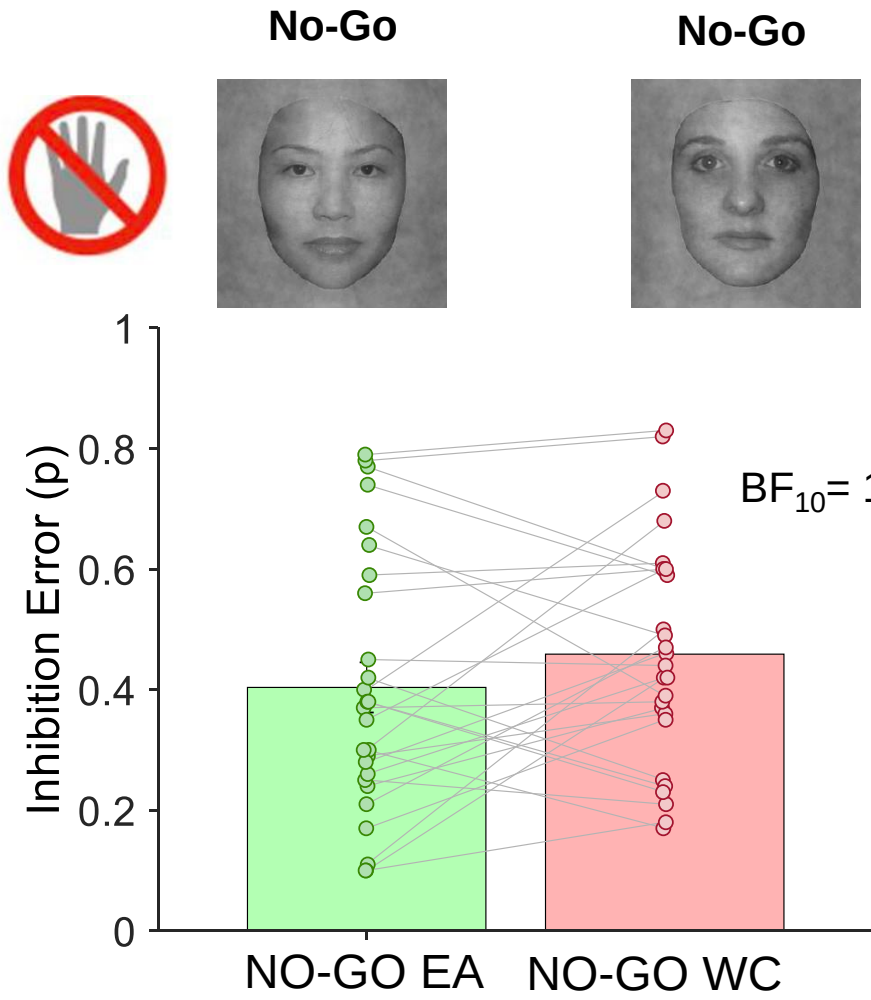


336 – 398 ms

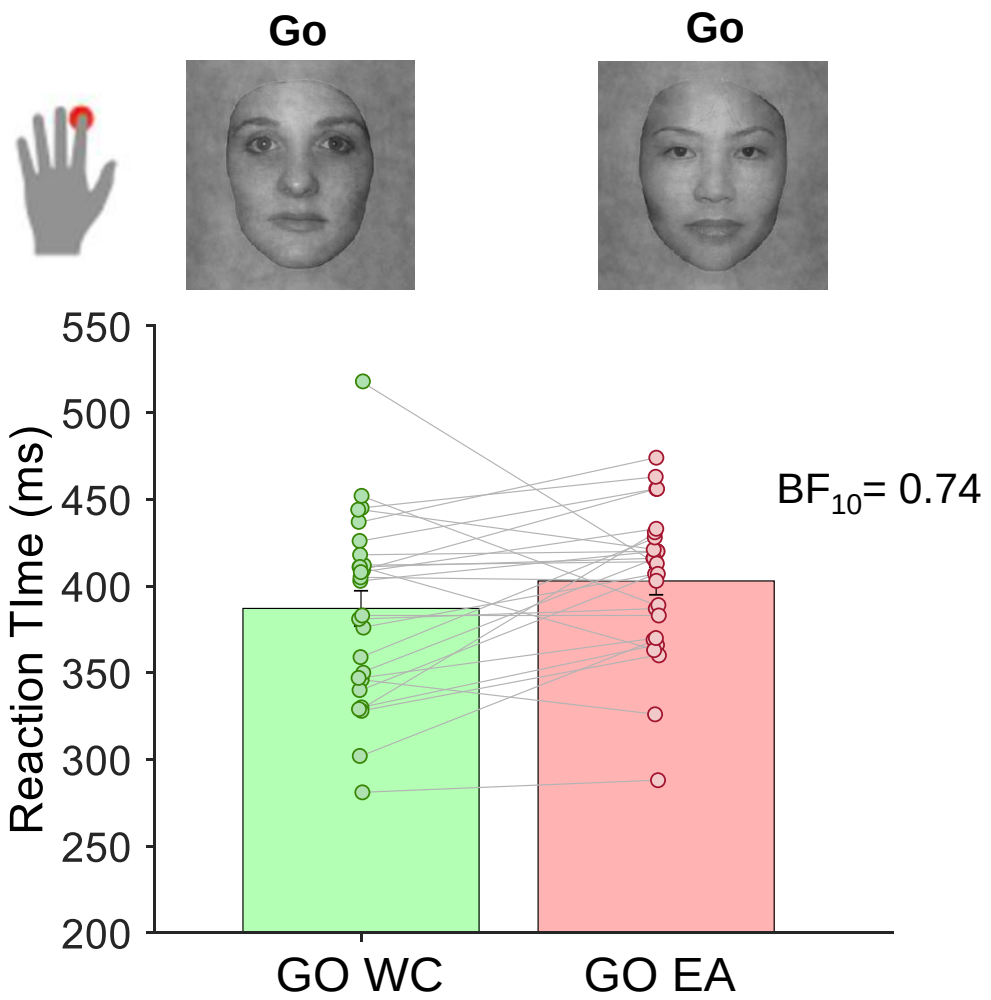


Study: **behavioural results**

NO-GO INHIBITION ERRORS

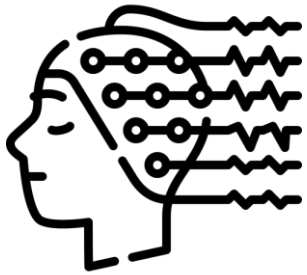


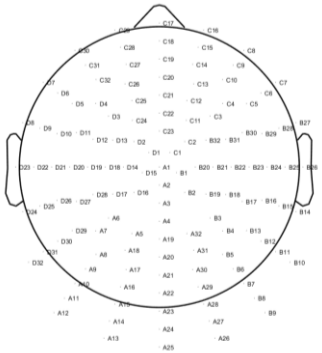
GO REACTION TIMES



Study: **trial structure**

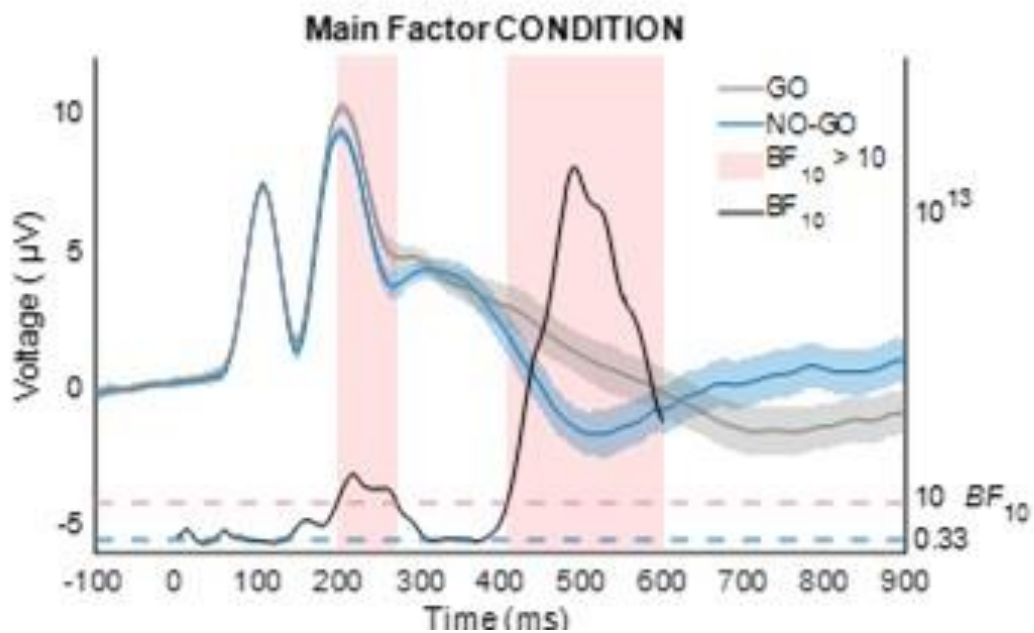
Feedback on response time

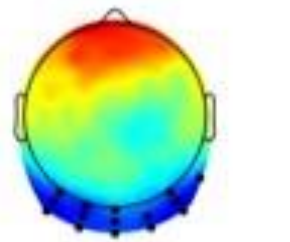


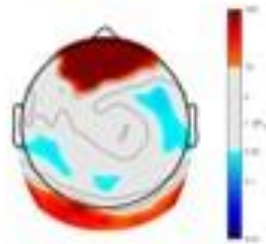


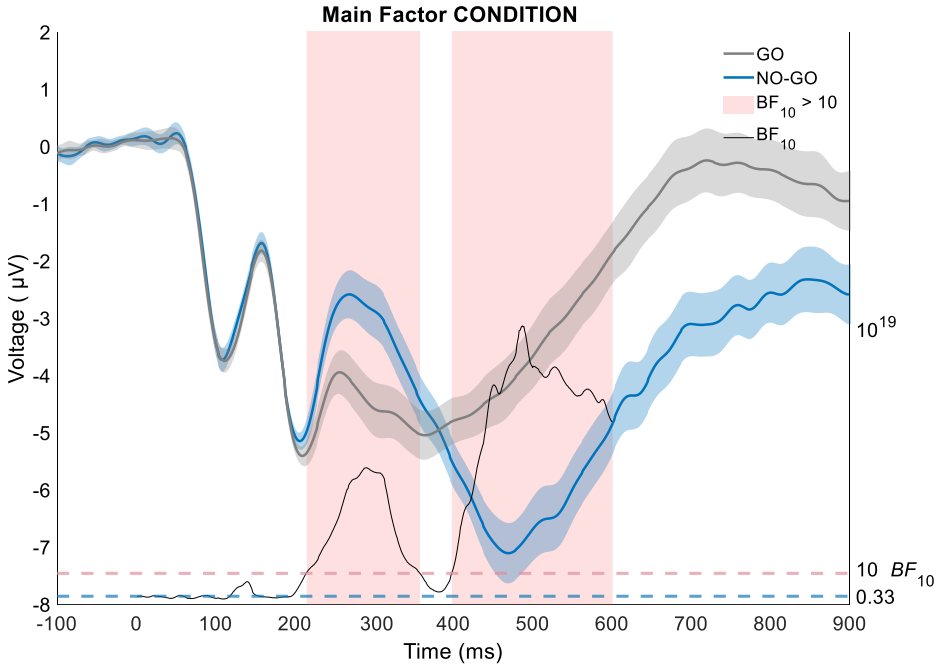
BIOSEMI

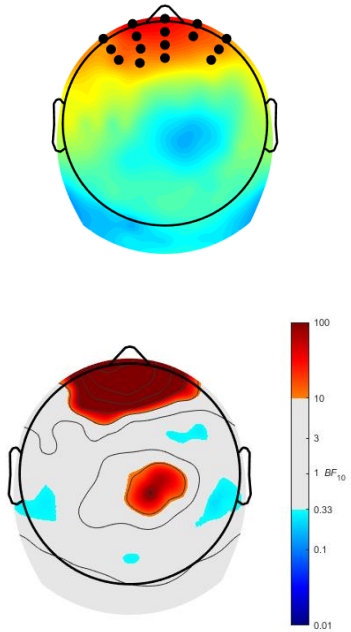
OCCIPITAL CLUSTER (200– 280 ms)








Main Factor CONDITION
GO
NO-GO
BF10 > 10
BF10
Voltage (µV)
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-100
0
100
200
300
400
500
600
700
800
900
Time (ms)
10^19
10 BF10
0.33


100
10
3
1 BF10
0.33
0.1
0.01