Building a hypothesis

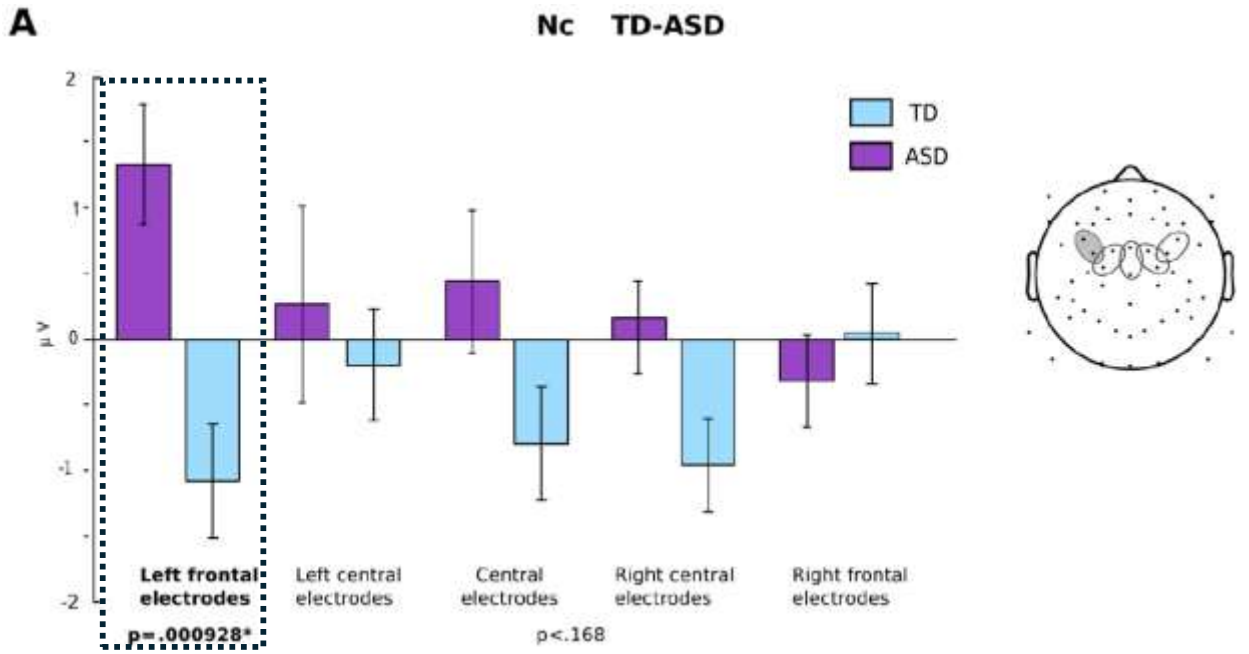
Cognitive analysis	Hypothesis testing
Functional decomposition $A = \{f_{attn}, f_{ment}, \cdots, f\{\cdot\}\}$ $P_{JA} := \{f_{attn}, f_{ment}\} \subset A$	**Temporal dependance** $P(f,t) = \beta_1 + \beta_2 JA + \beta_3 pJA + \beta_4 JA \cdot pJA$
Biological signature $f_{ment} \mapsto P_\beta(TPJ)$ $f_{\mathrm{attn}} \mapsto Nc_{ERP}$	**Dedicated regressor** $P(f,t) = \beta_1 + \beta_2 JA_{first} + \beta_3 JA$

Positive controls, and first differences

Biological signature

$$f_{ment} \mapsto P_{\beta}(TPJ)$$

$$f_{\text{attn}} \mapsto Nc_{ERP} \uparrow ASD \downarrow TD$$



Behavior was similar between TD and ASD

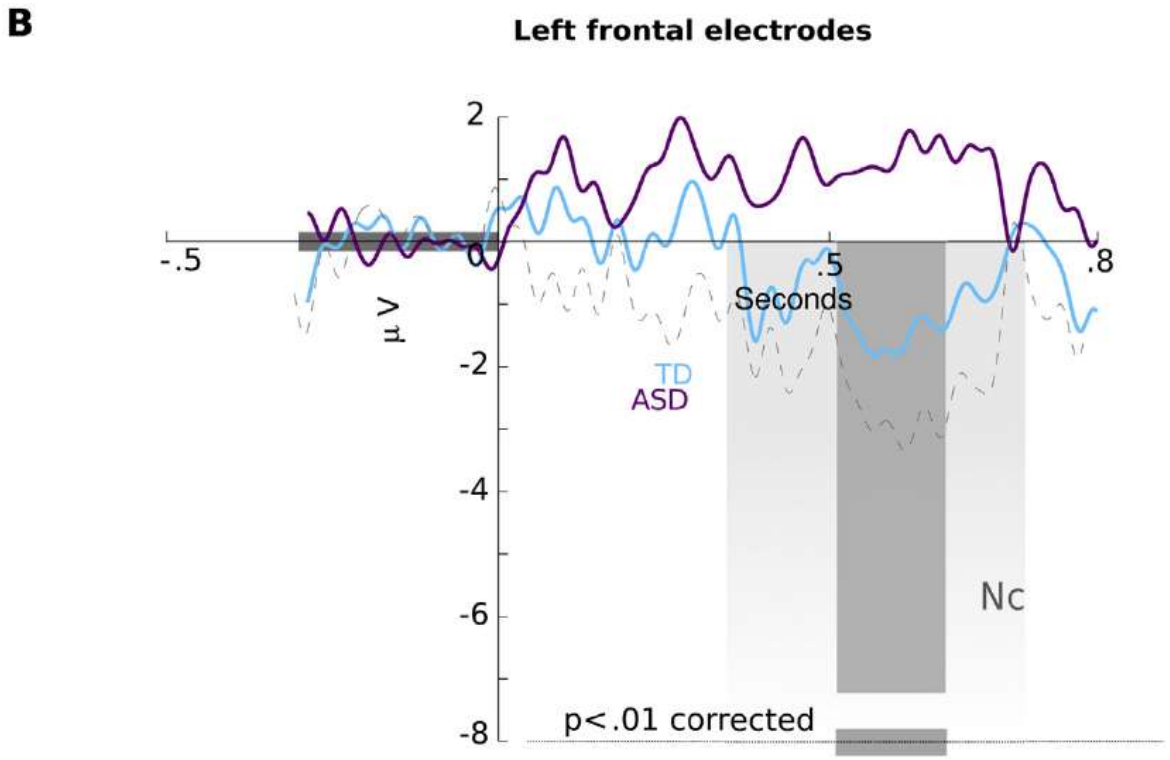
nJA trials (from valid trials[b])	52.7% ± 22.5 SD	61.8% ± 28.3 SD	.1
JA trials (from valid trials[b])	47.3% ± 22.5 SD	38.2% ± 28.3 SD	.13

ERP signal differs precisely at Nc component

Biological signature

$f_{ment} \mapsto P_{\beta}(TPJ)$

$f_{\text{attn}} \mapsto Nc_{ERP} \uparrow ASD \downarrow TD$

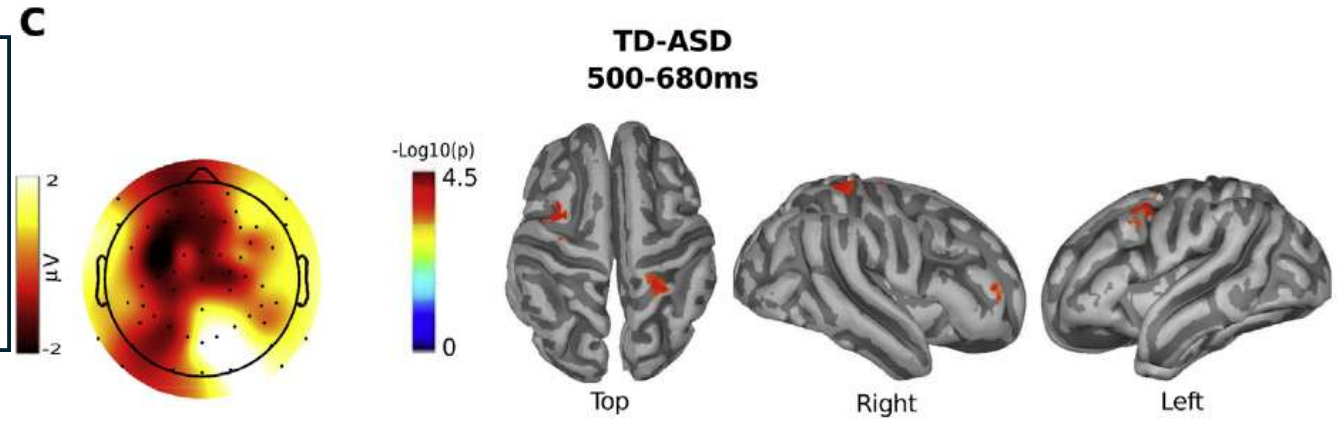


Source localization of Nc component differences

Biological signature

$f_{ment} \mapsto P_{\beta}(TPJ)$

$f_{\text{attn}} \mapsto Nc_{ERP} \mapsto \textit{Source}$

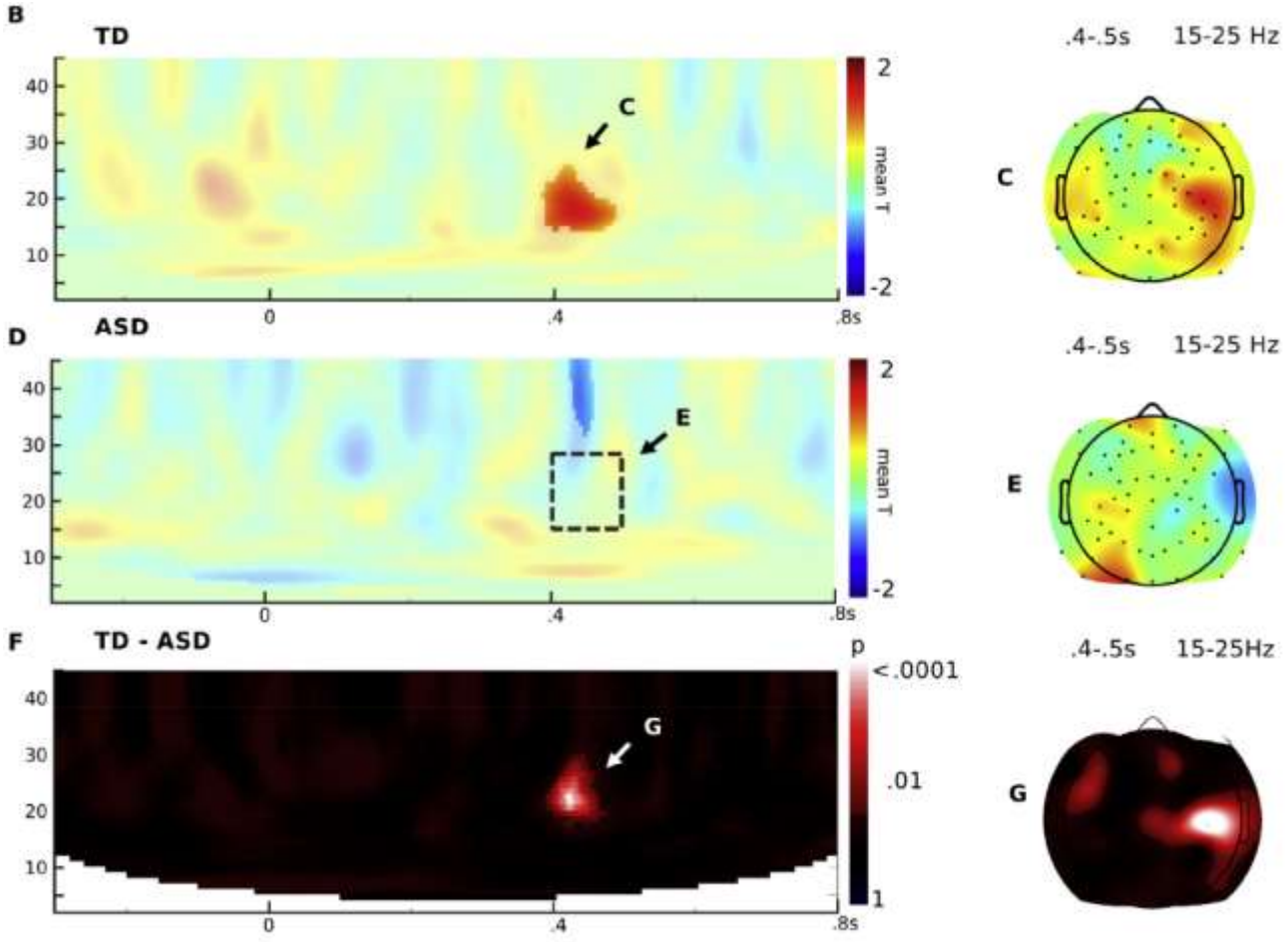


Beta power modulation in JA

Biological signature

$$f_{ment} \mapsto P_{\beta}(TPJ)$$

$$f_{\text{attn}} \mapsto Nc_{ERP} \mapsto \textit{Source}$$



Source localization of beta power modulation differences

Biological signature

$$f_{ment} \mapsto P_{\beta}(TPJ) \mapsto Source$$

$$f_{\text{attn}} \mapsto Nc_{ERP} \mapsto Source$$