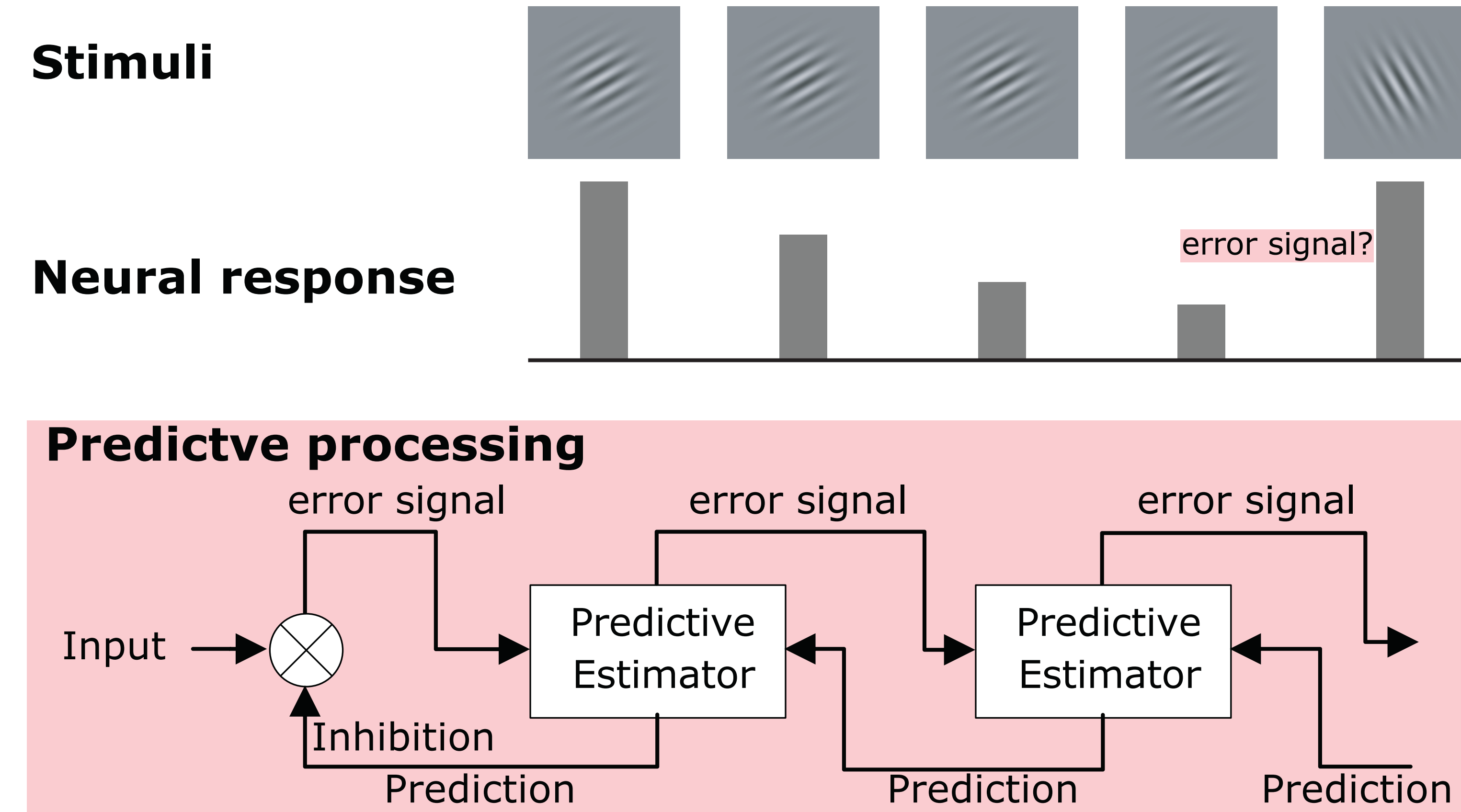


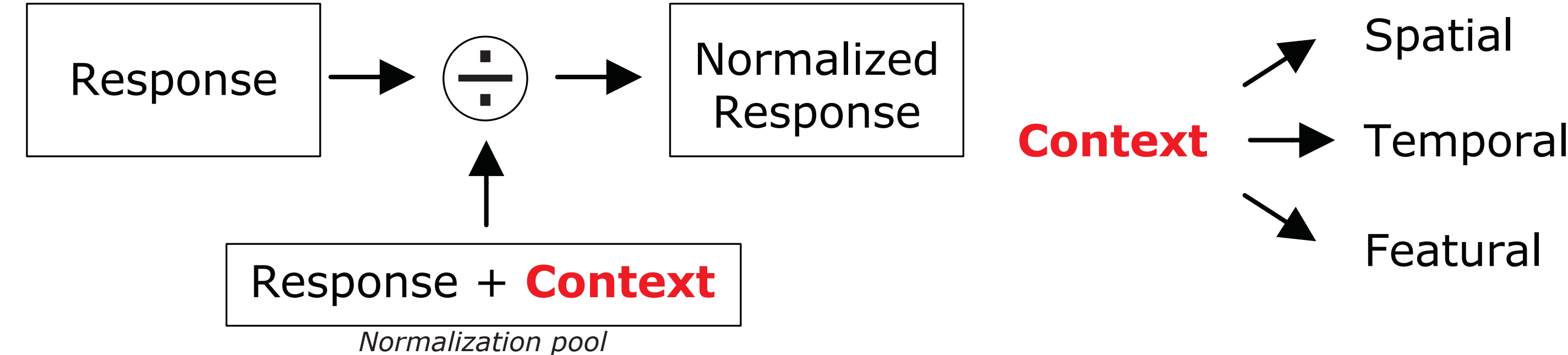
predictive processing in visual cortex

Ningkai Wang, Ralph Wientjens, Jurjen Heij, Gilles de Hollander, Jan Theeuwes, Tomas Knapen
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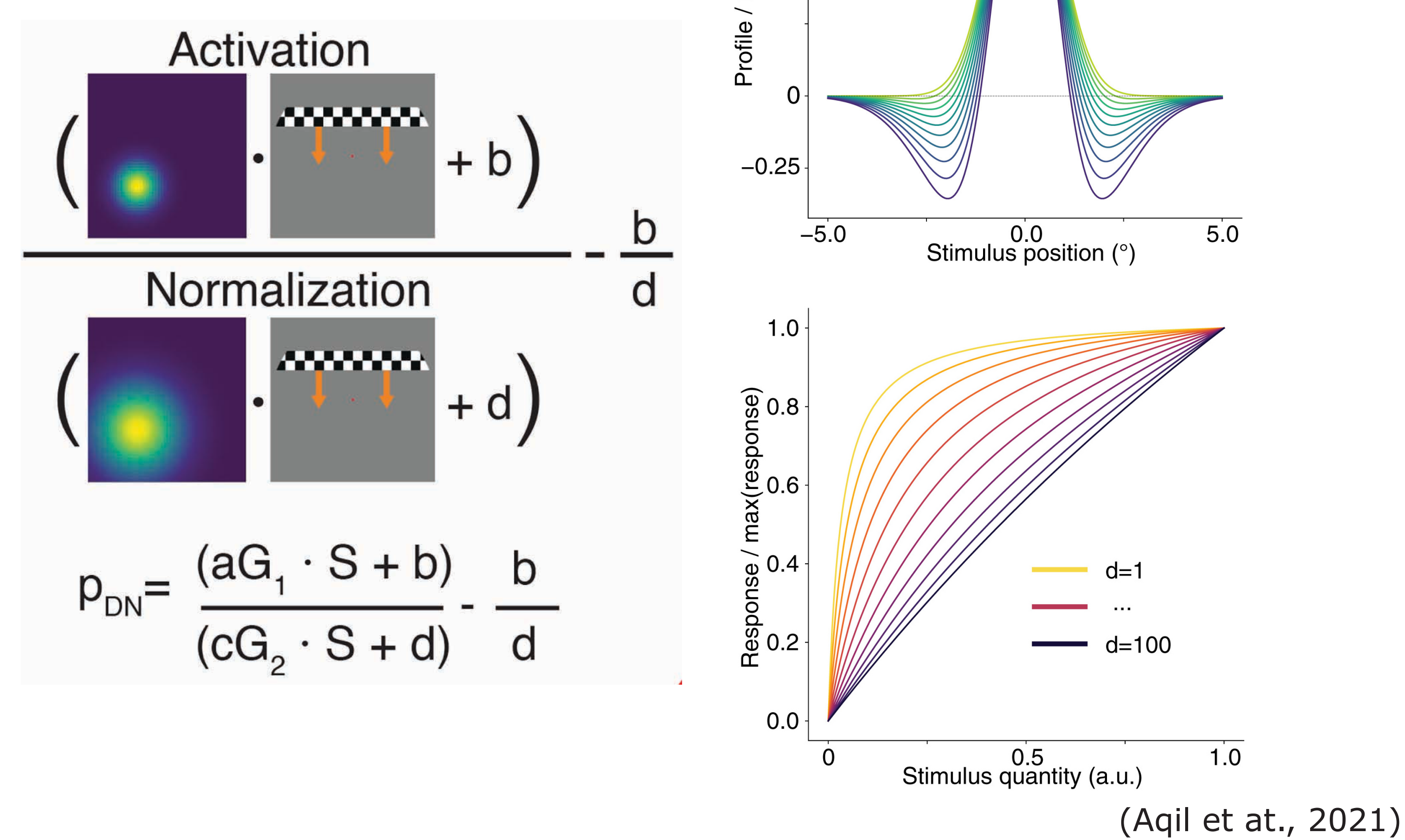
Background



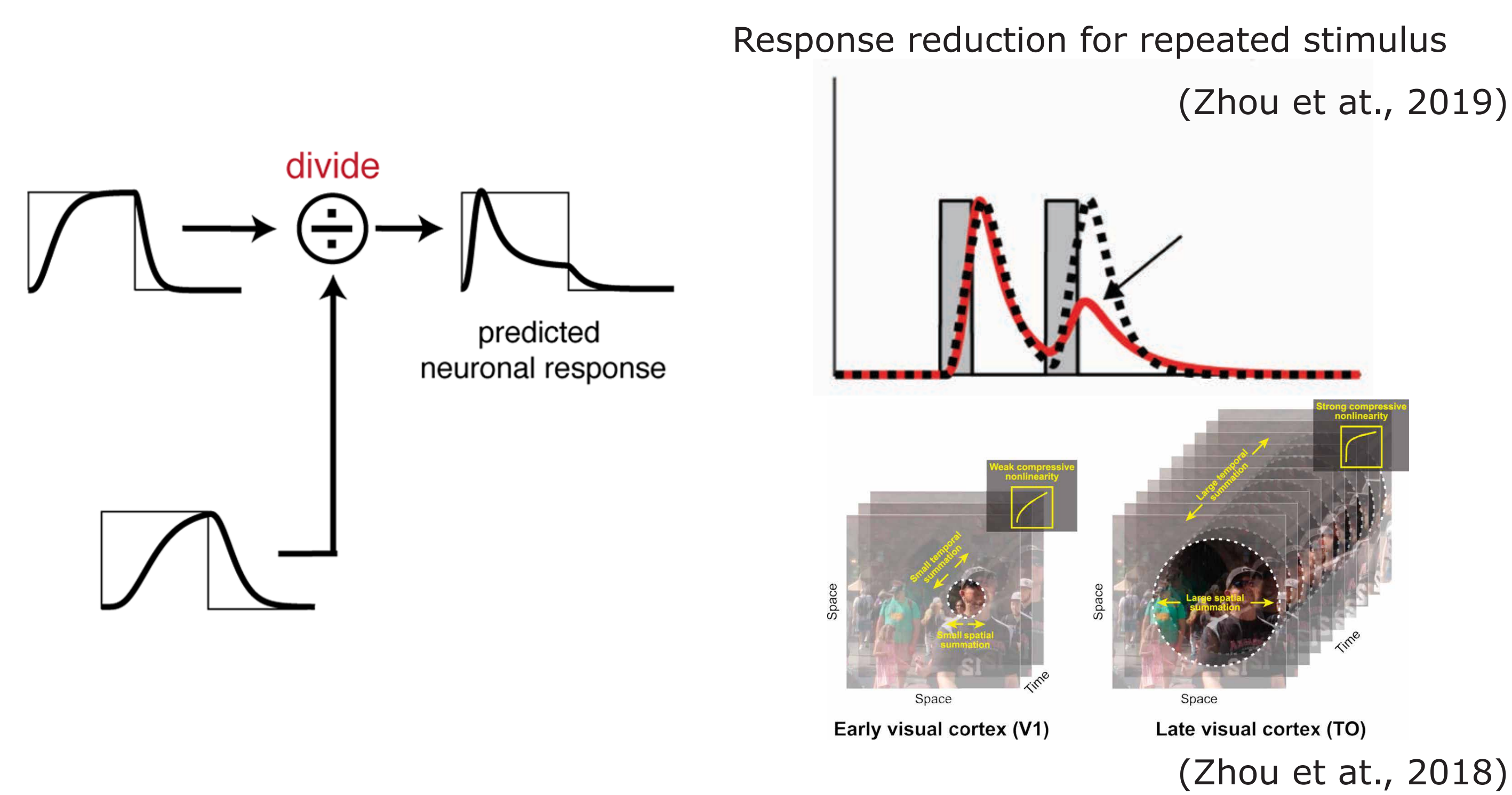
Divisive normalization



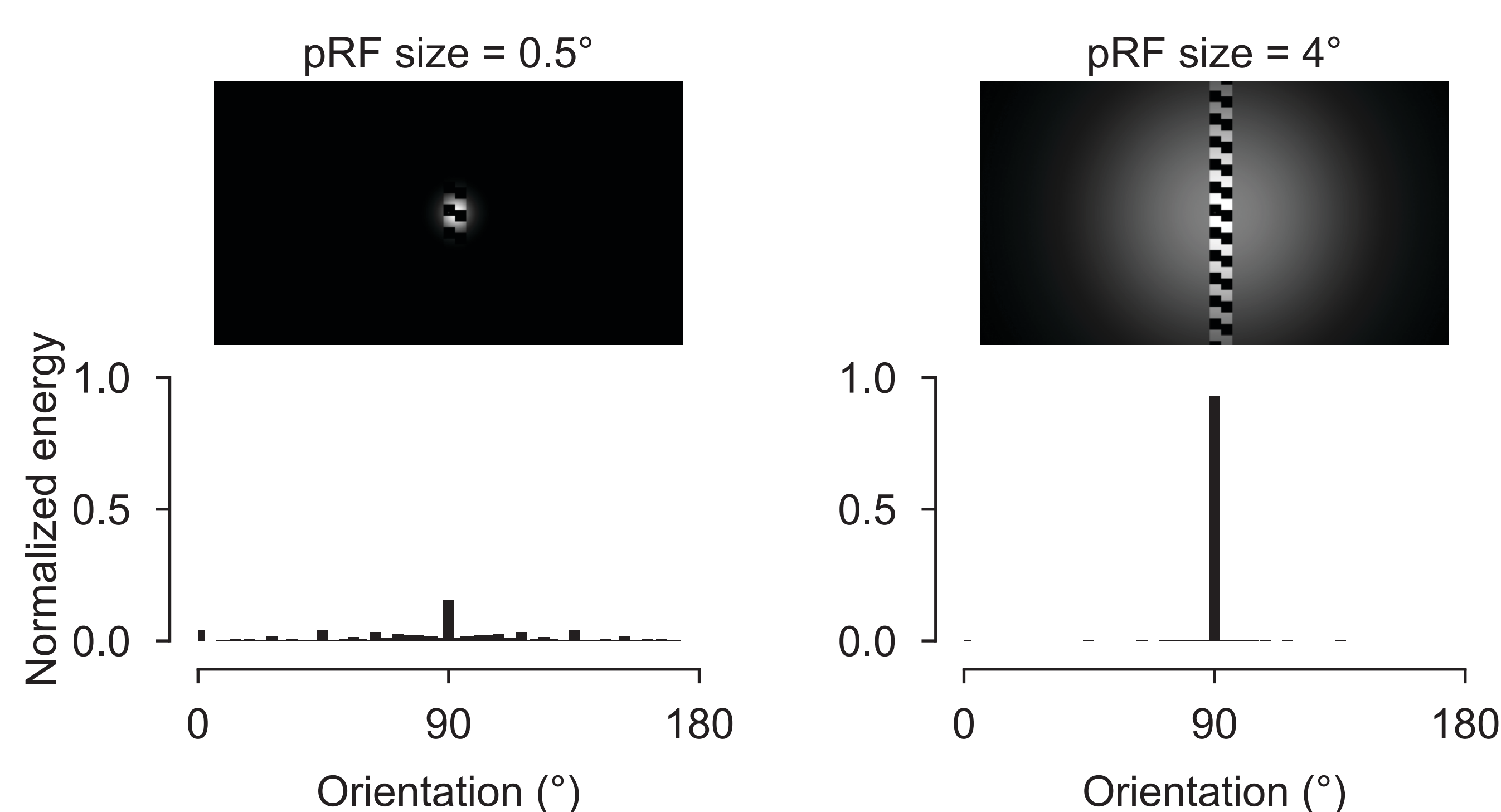
Spatial normalization



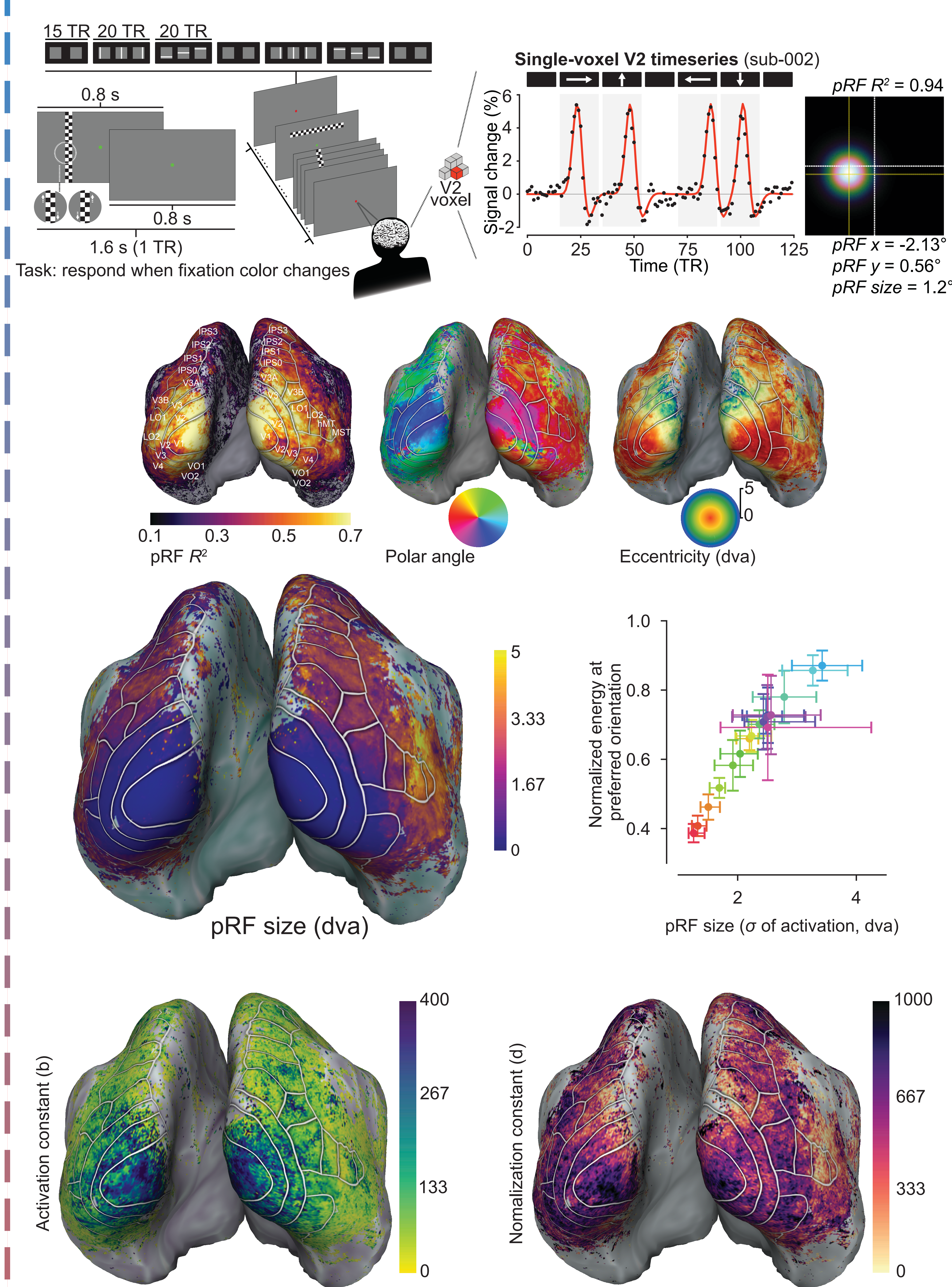
Temporal (delayed) normalization



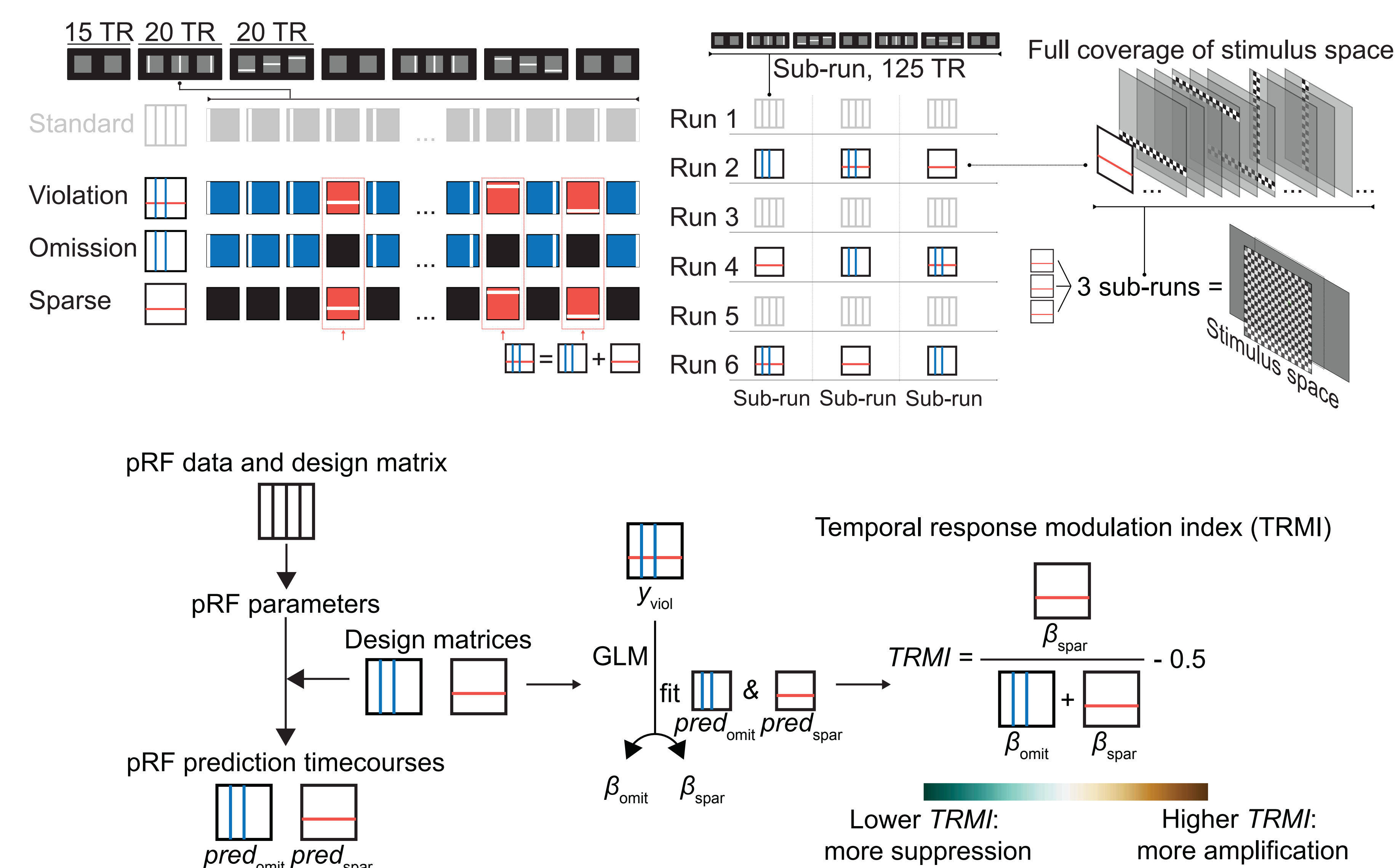
pRF-size-dependent feature



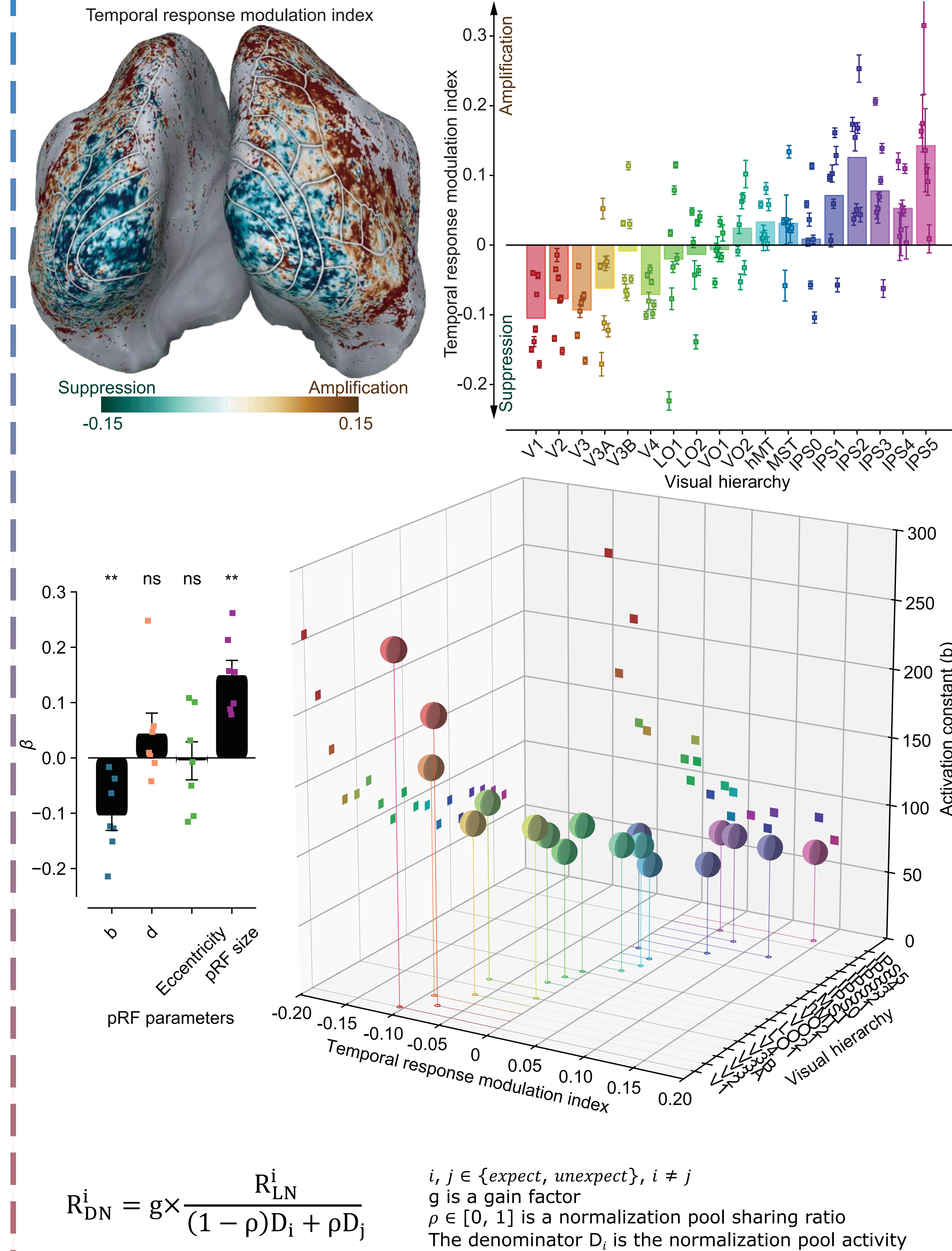
pRF Experiment



Violation design

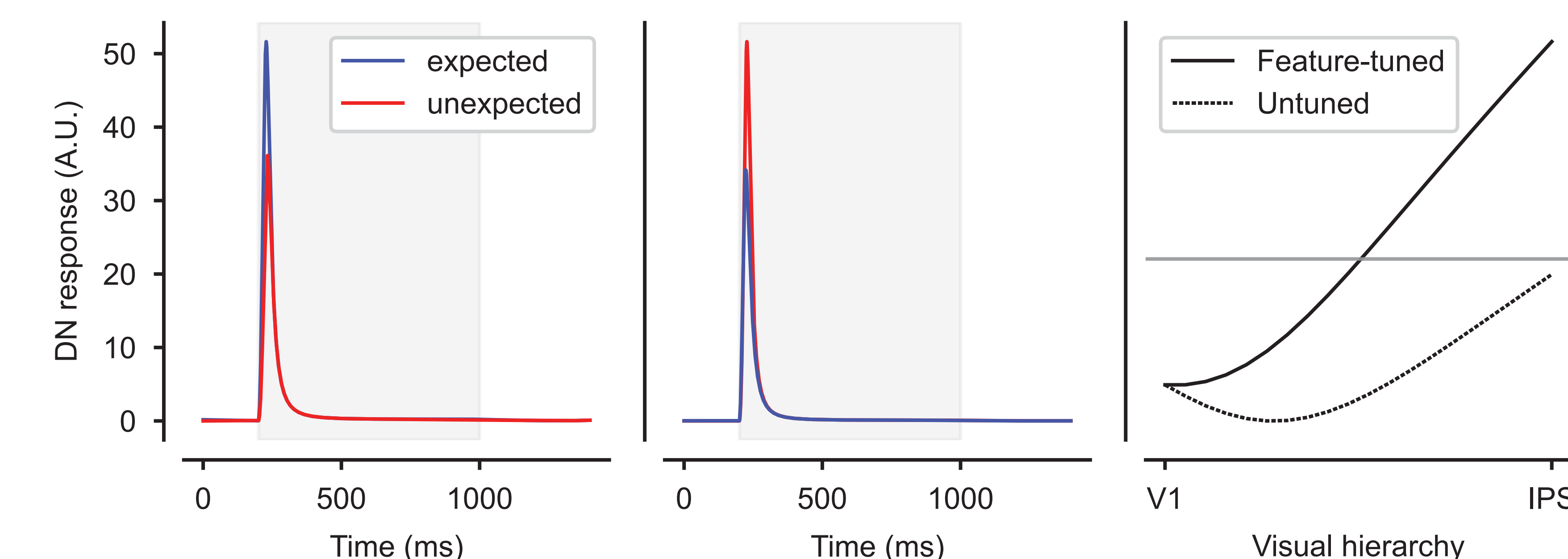


Results



$$R_{DN}^i = g \times \frac{R_{LN}^i}{(1 - \rho)D_i + \rho D_j}$$

$i, j \in \{expect, unexpected\}, i \neq j$
 g is a gain factor
 $\rho \in [0, 1]$ is a normalization pool sharing ratio
 The denominator D_i is the normalization pool activity



Conclusion

- Expectation-like modulations in visual cortex can emerge from feature-tuned, delayed divisive normalization
- No explicit top-down prediction needed, ***postdiction suffices***
- Promise: constructing higher-level cognition from DN building blocks