

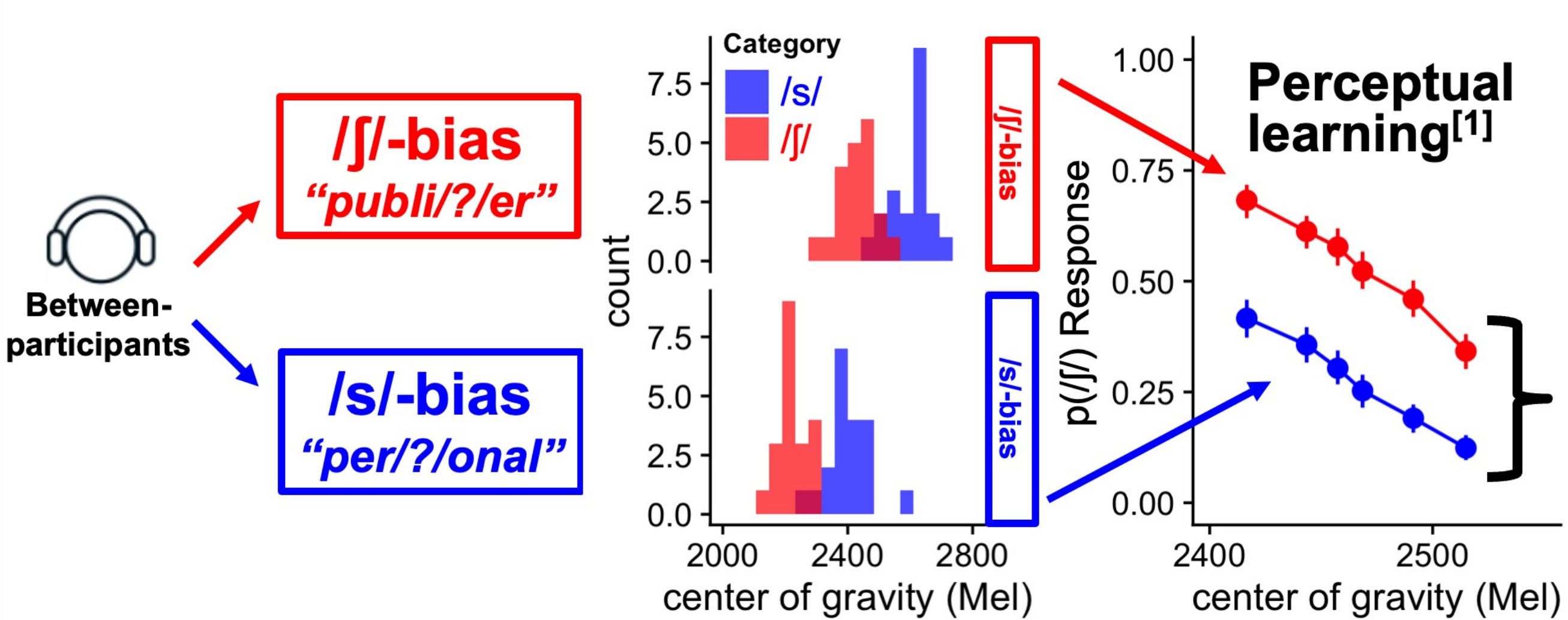
# No specialized mechanisms needed? Standard perceptual compensation might explain reduced perceptual learning

Shawn N. Cummings & T. Florian Jaeger

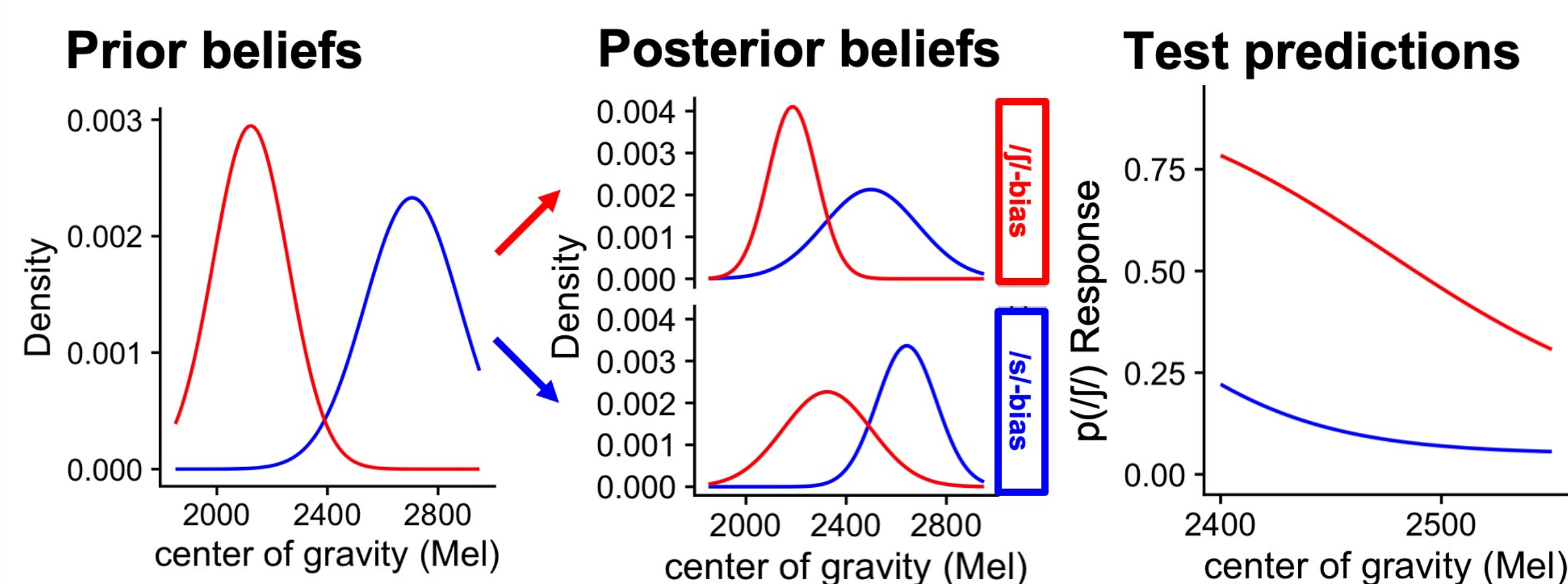


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## Lexically guided perceptual learning (LGPL)

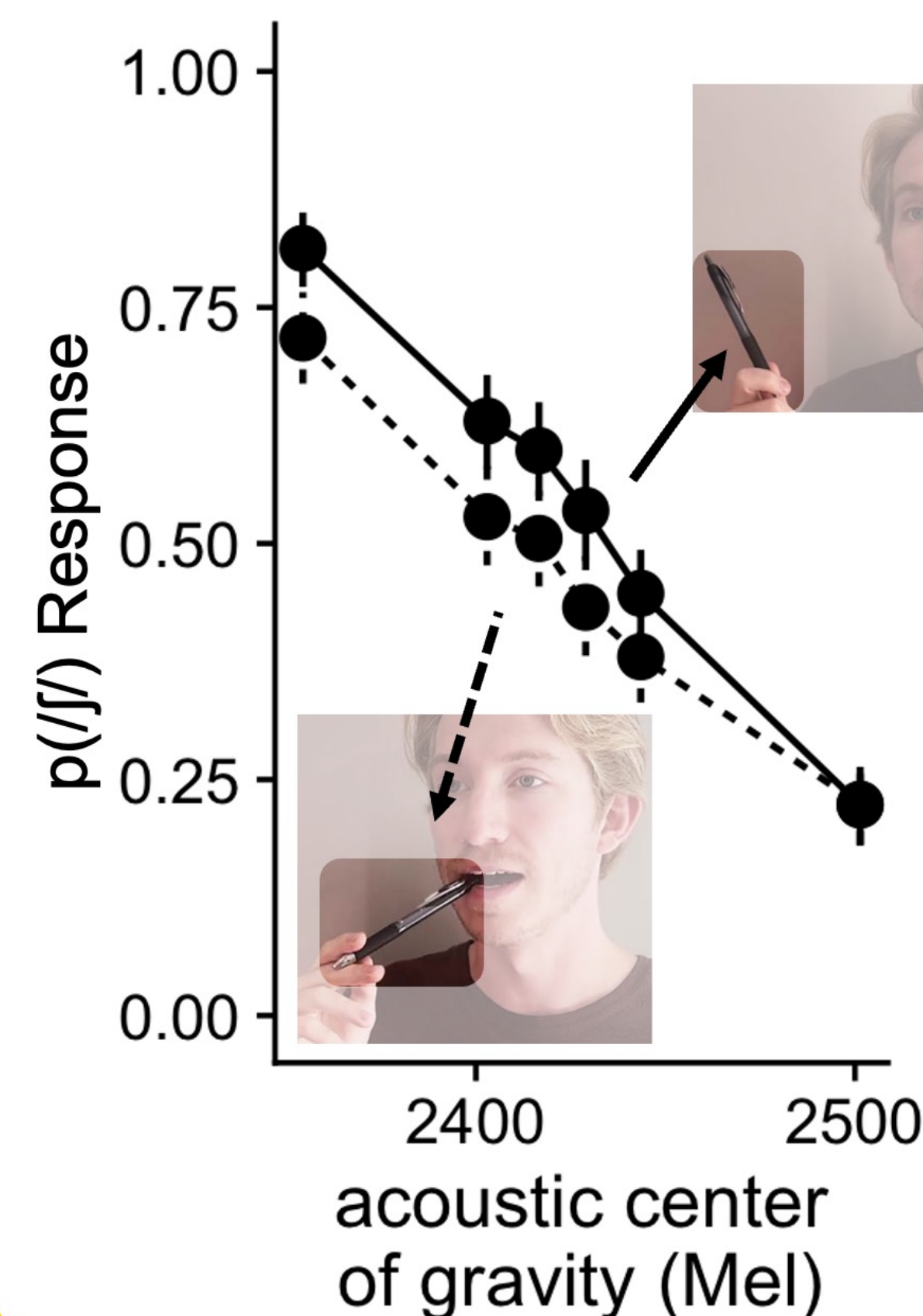


Well-predicted by **distributional learning** [4,5]

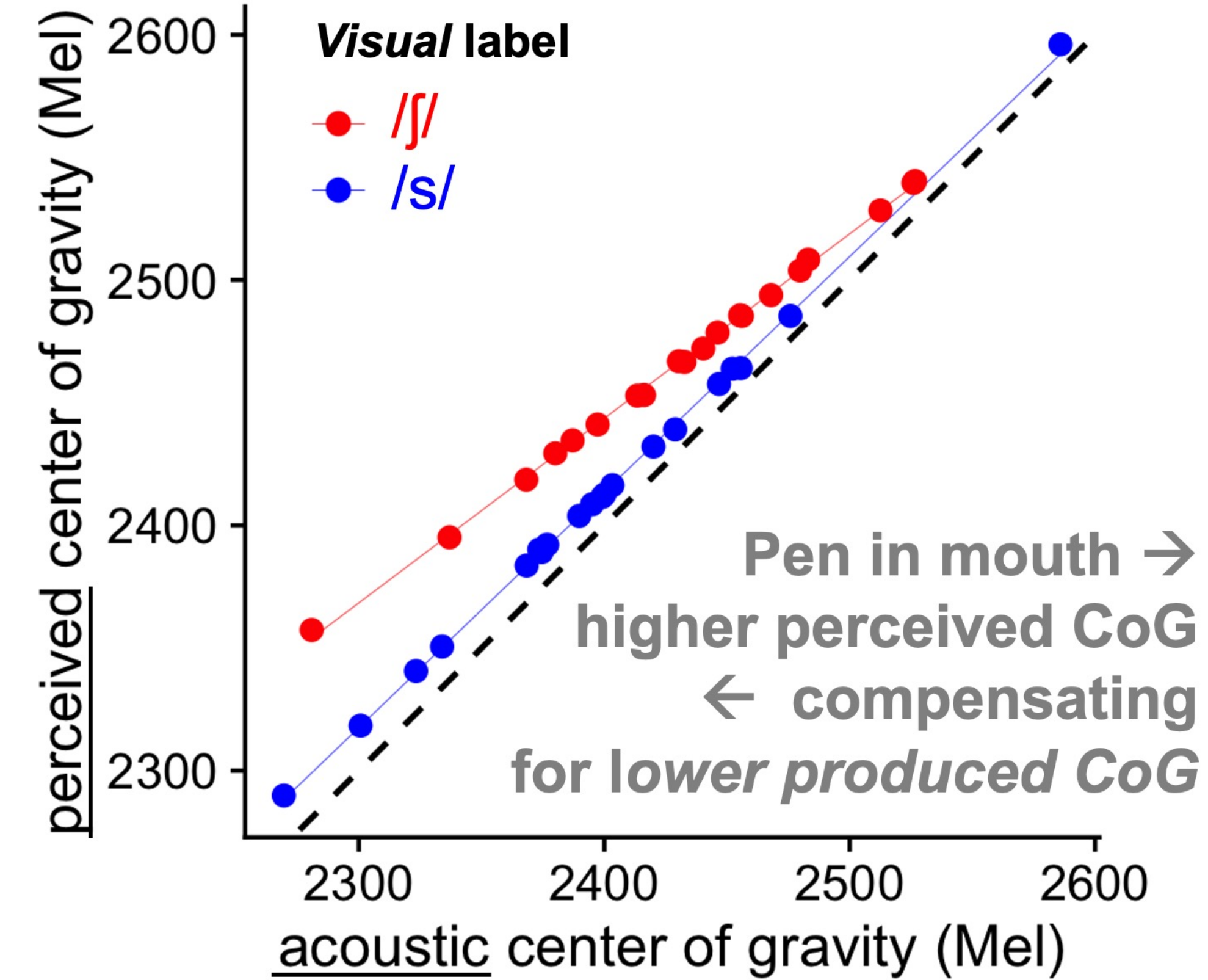


## Compensation for (visual) articulatory perturbation

Impact on categorization<sup>[10]</sup>

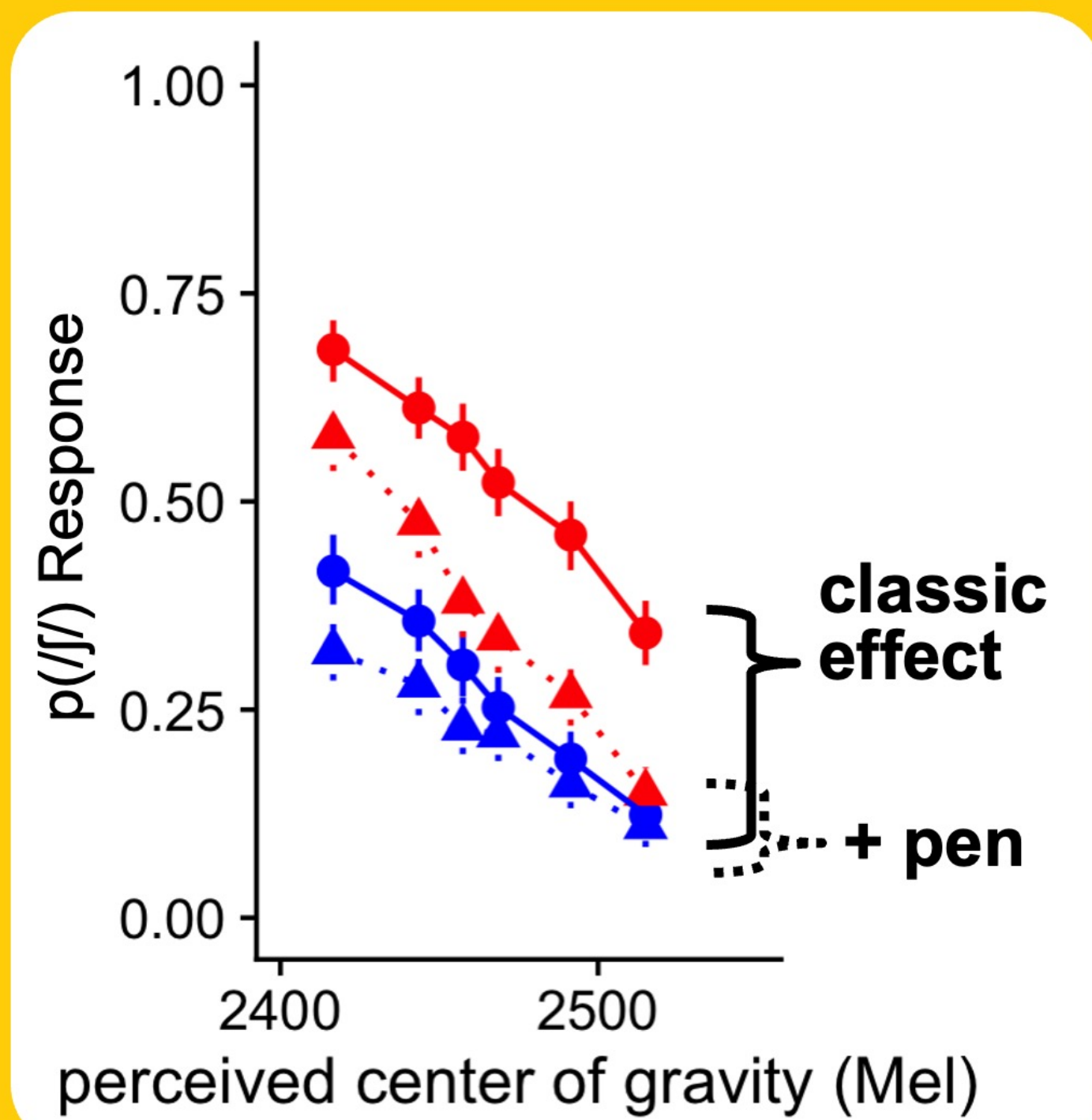


Estimated impact on percept



## The puzzle

LGPL reduced when shifted pronunciation co-occur with pen in mouth<sup>[7-9]</sup>



(despite otherwise high robustness to cognitive load, distraction, etc.)<sup>[2,3,6]</sup>

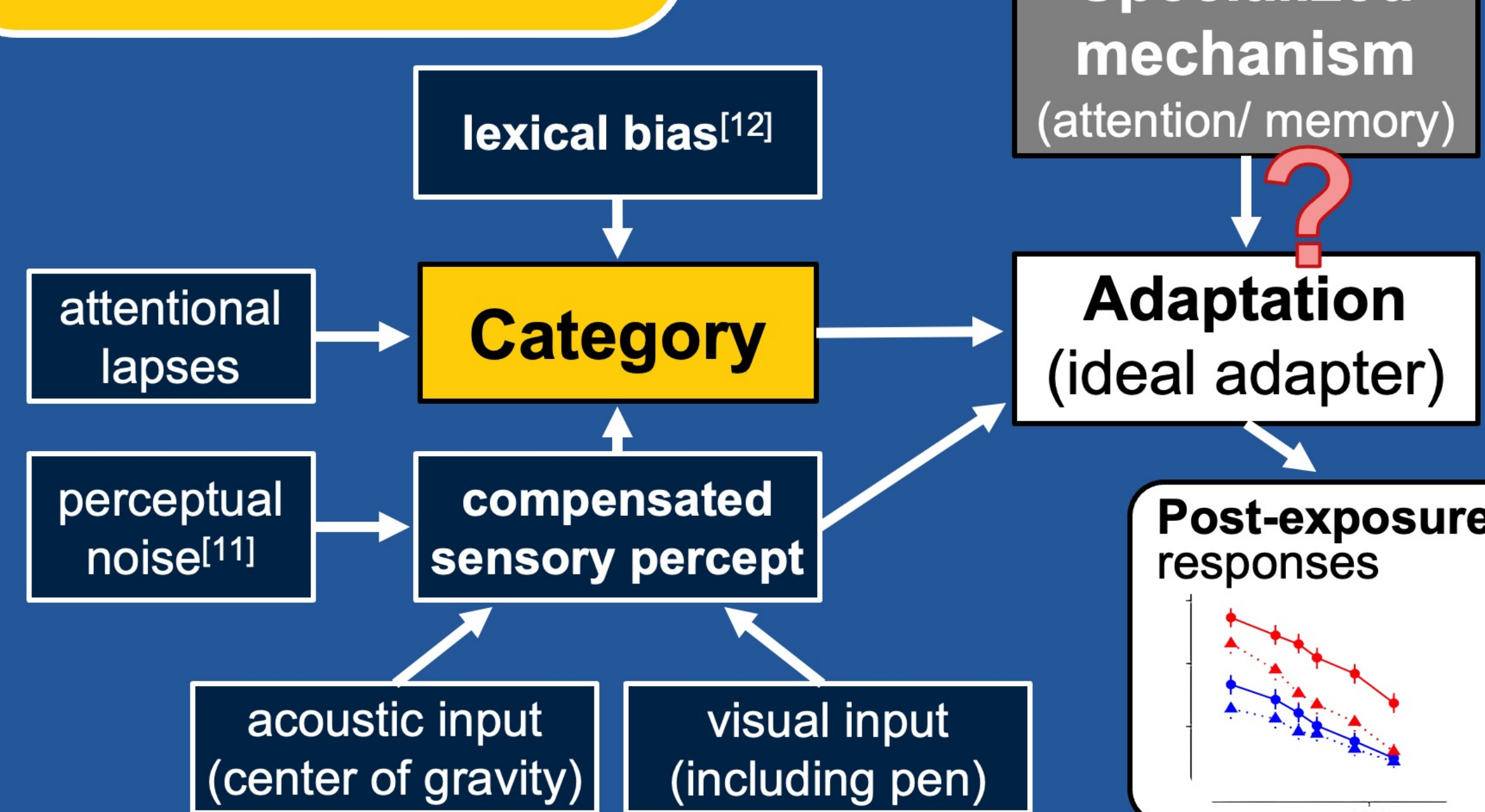
## Take-home points

No specialized *attention or memory* mechanisms needed

Computational theories reduce ad-hoc reasoning and proliferation of phenomenon-driven theories

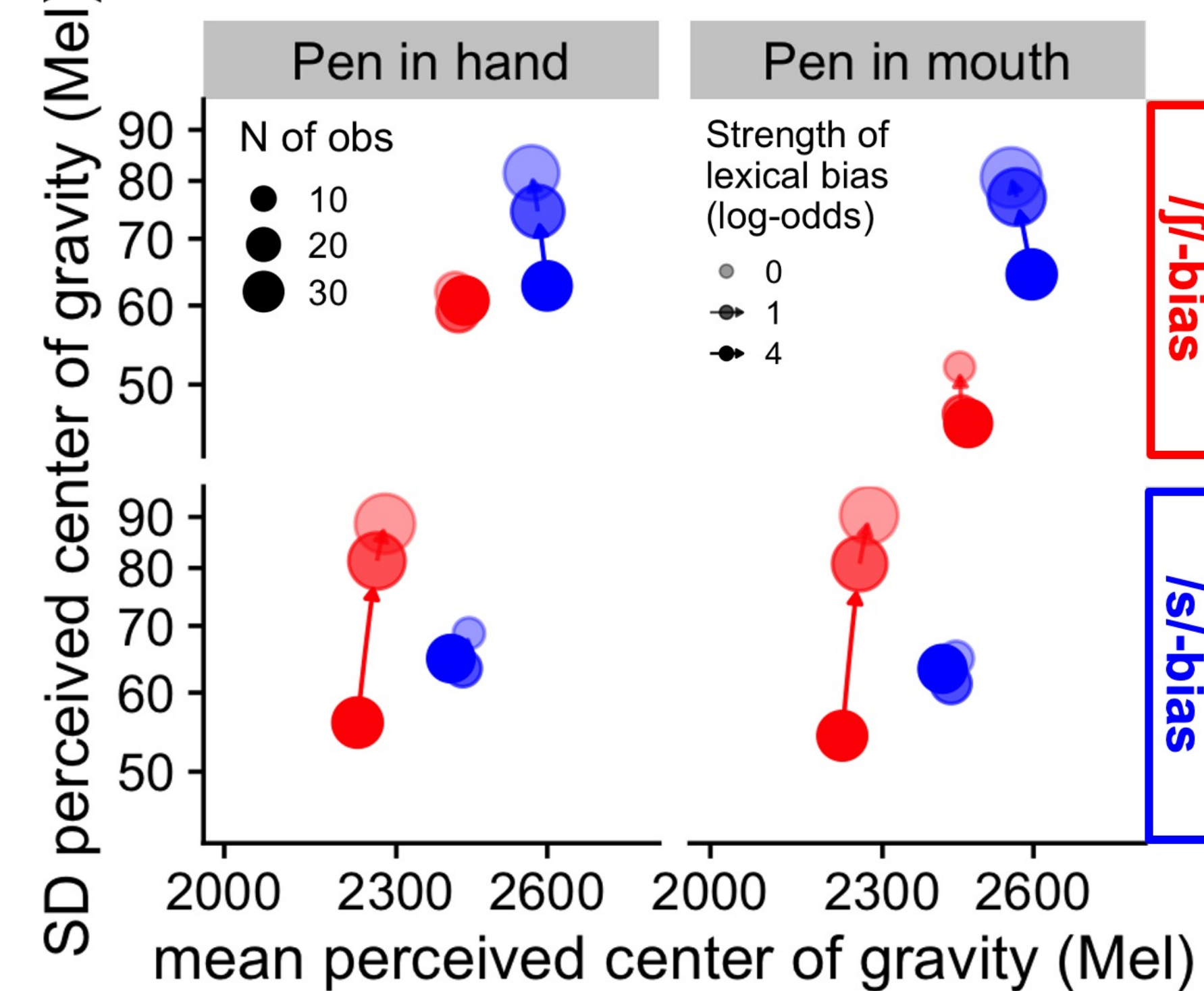
Bayesian ideal adapter reveals that joint effects of *known* influences—perceptual compensation, perceptual noise, lexical biases, & experiment-specific item properties—*already* predict reduction of LGPL with pen in mouth

## Known influences

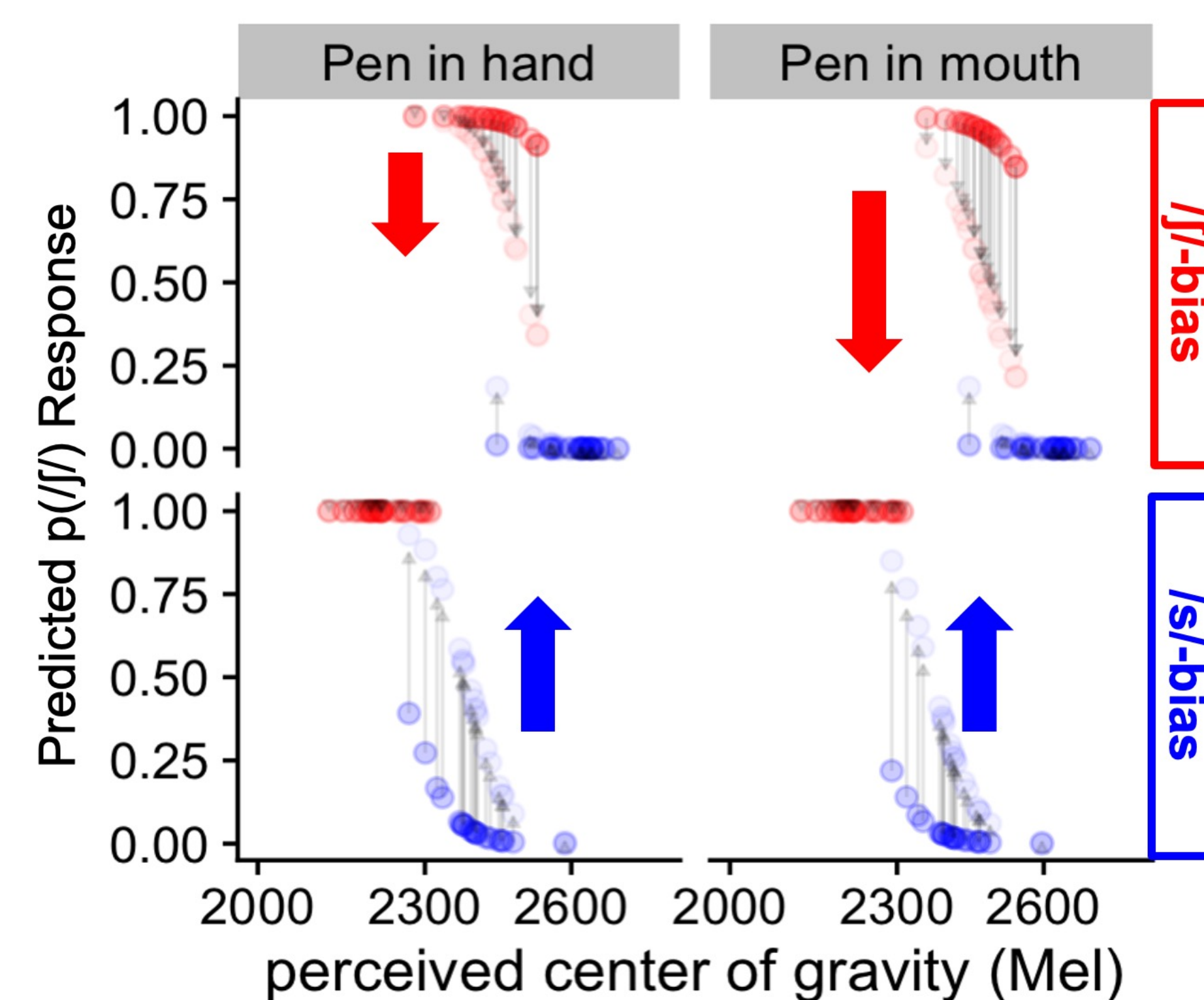


## Consequences for LGPL exposure

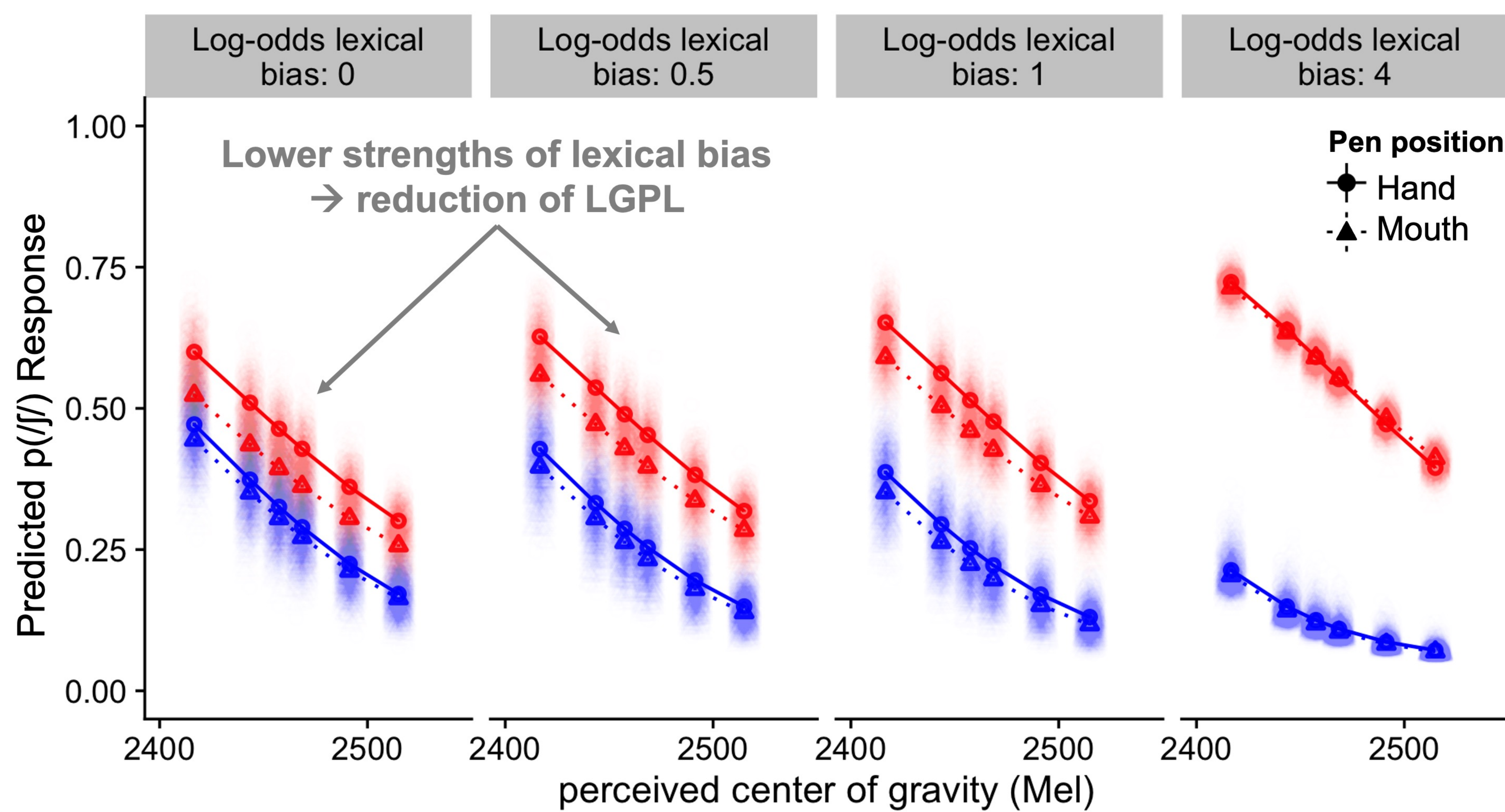
Summary statistics of input



Individual exposure items



## Consequences for test perception



References [1] Norris, D., et al. (2003) *Cog. Psych.* [2] Samuel, A. (2016). *Cog. Psych.* [3] Zhang, X. & Samuel, A. (2014). *JEP:HPP*. [4] Kleinschmidt, D. & Jaeger, T.F. (2015). *Psych. Review*. [5] Cummings, S.N. & Theodore, R. (2023). *Cognition*. [6] Liu, L. & Jaeger, T.F. (2018) *JEP:HPP*. [7] Kraljic, T., Brennan, S., & Samuel, A. (2008). [8] Kraljic, T. & Samuel, A. (2011). [9] Liu, L. & Jaeger, T.F. (2018) *Cognition*. [10] Cummings, S., Karboga, G., Yang, M., & Jaeger, T.F. (2025). *JEP:LMC*. [11] Kronrod, Y., Coppess, E., & Feldman, N. (2016). *PBR*. [12] Kingston, J. et al. (2016). *JEP:HPP*.