

Neural dynamics of event perception under reduced uncertainty

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Introduction

- Event perception involves spontaneously dividing experience into discrete units (*event segmentation*) at points of uncertainty (*event boundaries*).¹

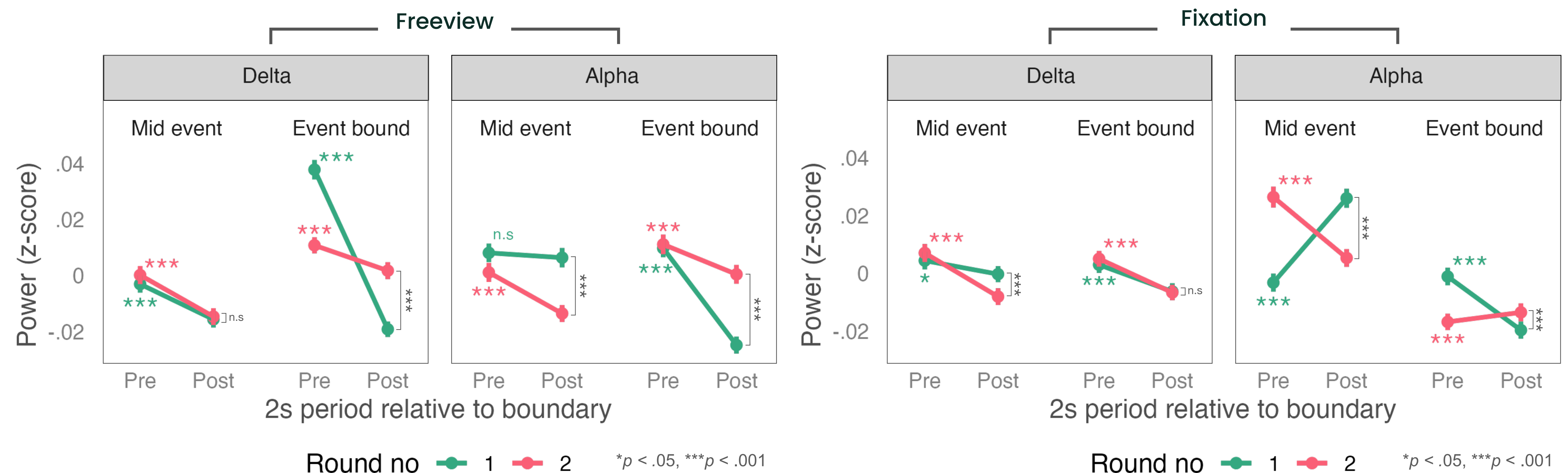
- How does event processing change when uncertainty around event boundaries is reduced?

We examined whether EEG **delta (2-4 Hz)** and **alpha (8-12 Hz) power suppression**, which are associated with external processing², are:

- more pronounced** at **event boundaries**.
- attenuated** with **reductions in uncertainty** from repeated viewing.

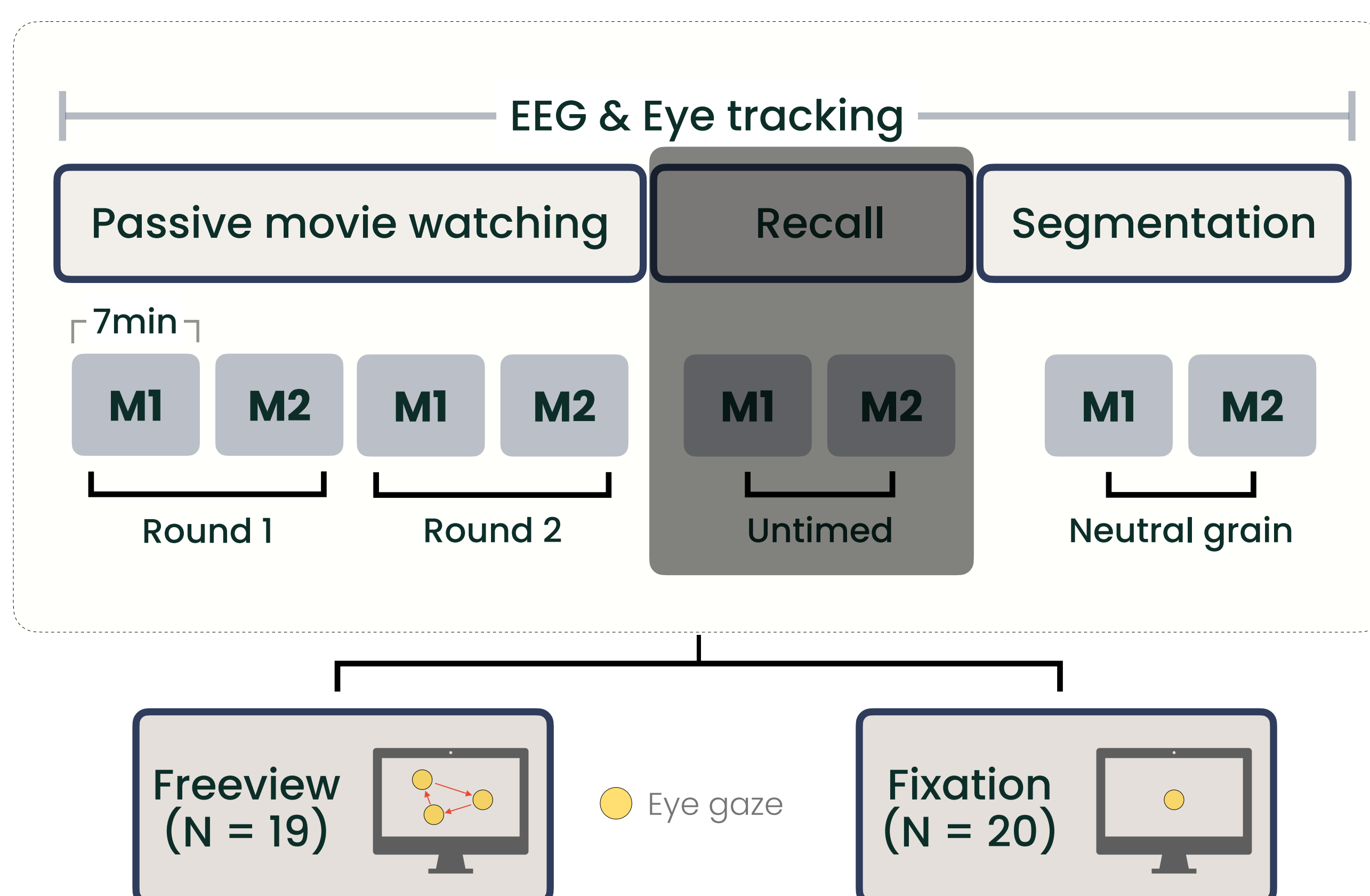
Delta & Alpha power* change across event boundaries and uncertainty level.

*averaged across all 128 channels

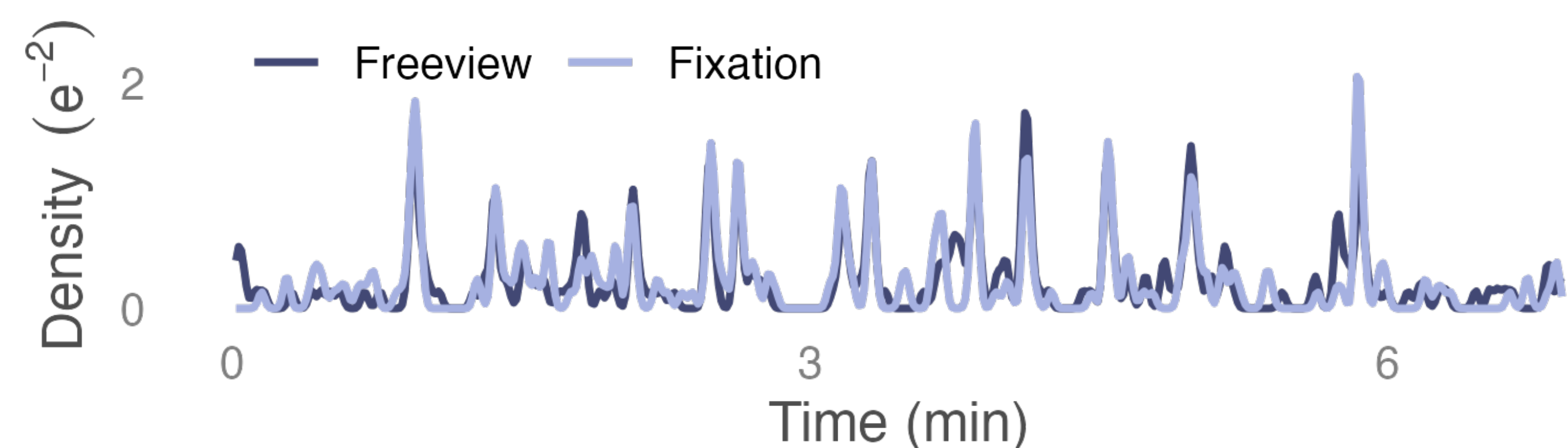


- Alpha suppression **across** event boundaries **attenuated** with ↓ uncertainty in freeview & fixation.
- Delta suppression **across** event boundaries **attenuated** with ↓ uncertainty in freeview only.

Experiment design

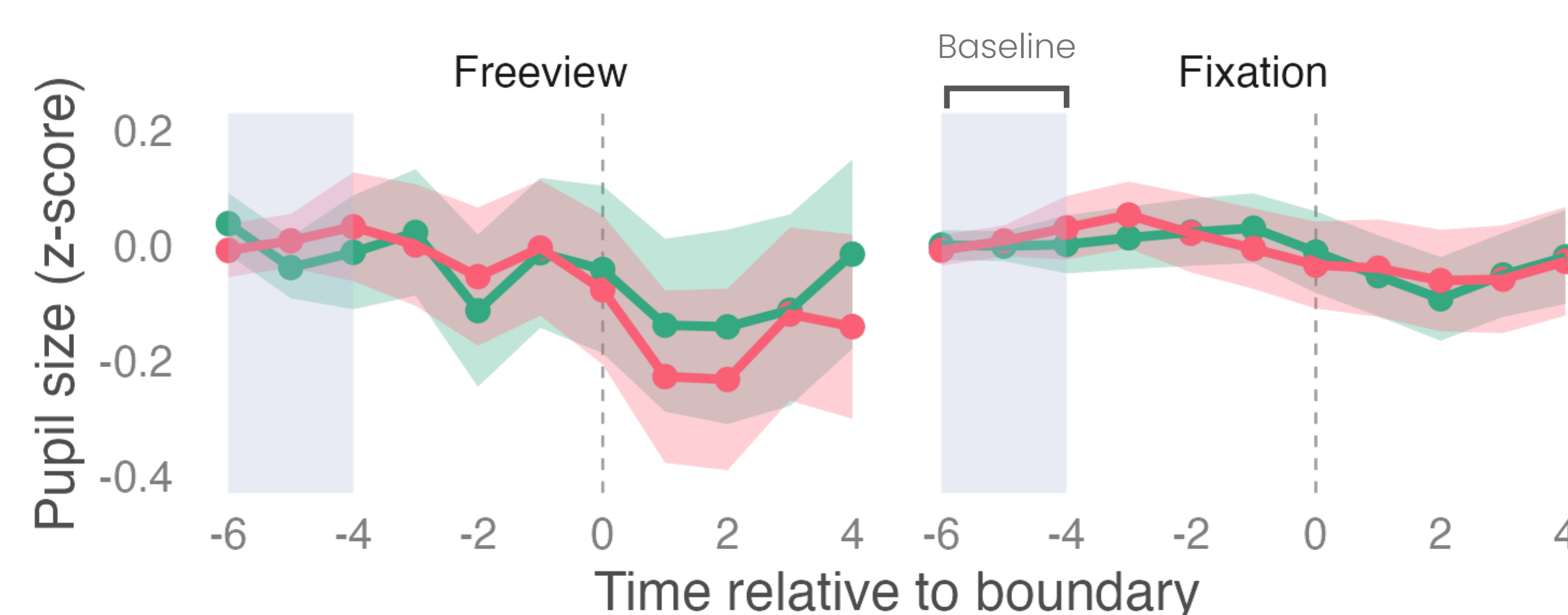


- Comparable segmentation in freeview and fixation.



Pupil size changes across event boundaries.

*Preliminary finding



- Pupil size **decreased** across event boundary.
- Decrease was **consistent** across viewings.

References

- Zacks, et al., (2007). *Psych Bull*, 133(2): 273-293.
- Wamsley et al., (2023). *JoCN*, 35(10): 1617-1634



Conclusion

- Delta & Alpha suppression (markers of external processing) are **amplified from pre to post** event boundaries.
- This effect was **attenuated** with reduced uncertainty from:
 - Knowledge about **what happens when**.
 - Whether that knowledge was developed via **active visual sampling**.
- Event segmentation and prior knowledge may **dynamically modulate** processing of naturalistic movies.