Saccadic latency and choice in a concurrent random interval reinforcement schedule

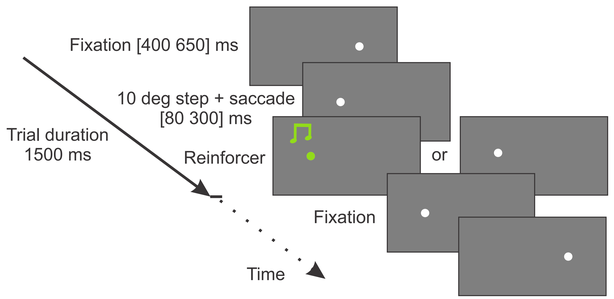
Cécile Vullings & Laurent Madelain
Laboratoire SCALab, UMR CNRS 9193, Université de Lille

INTRODUCTION

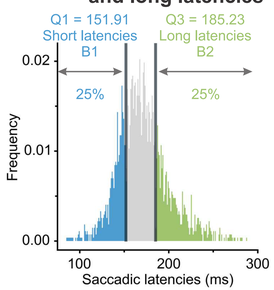
Saccadic latency distributions are known to be affected by reinforcement contingencies (Madelain et al., 2007).

Here, we probe whether one can voluntarily control one's latencies.

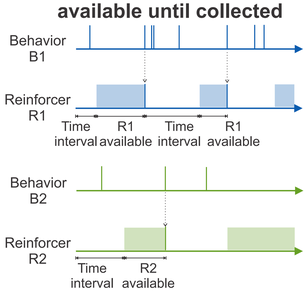
METHODS



Using the individual baseline latency distributions, we defined short and long latencies



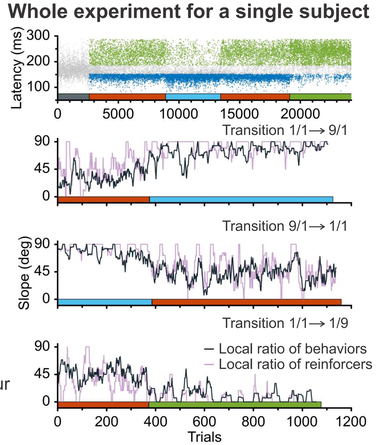
Latencies are independently reinforced and reinforcers are available until collected



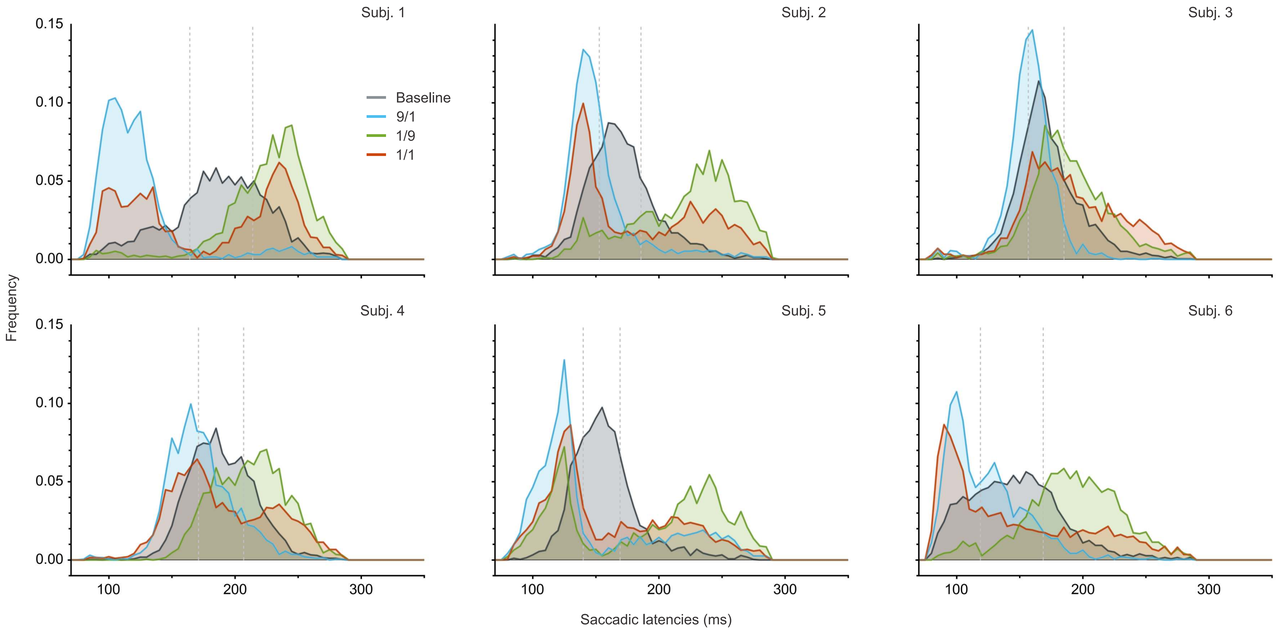
3 blocked experimental conditions	
9/1	9 **R1** for 1 R2
1/9	1 R1 for 9 **R2**
1/1	1 **R1** for 1 **R2**

- 400 trials per session
- 60 sessions per subject
- Change-over delay = 1 trial
- Reinforcer = 0.02 €
- Each participant experienced all four conditions (1/1, 9/1 and 9/1)

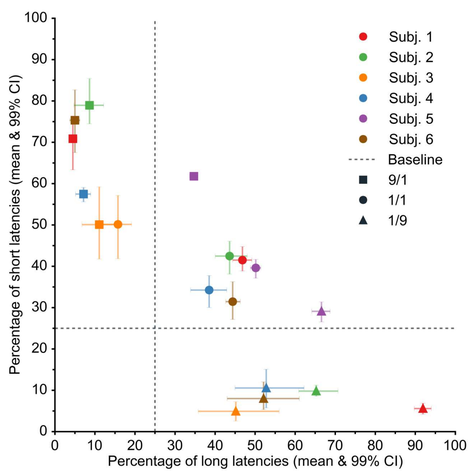
Whole experiment for a single subject



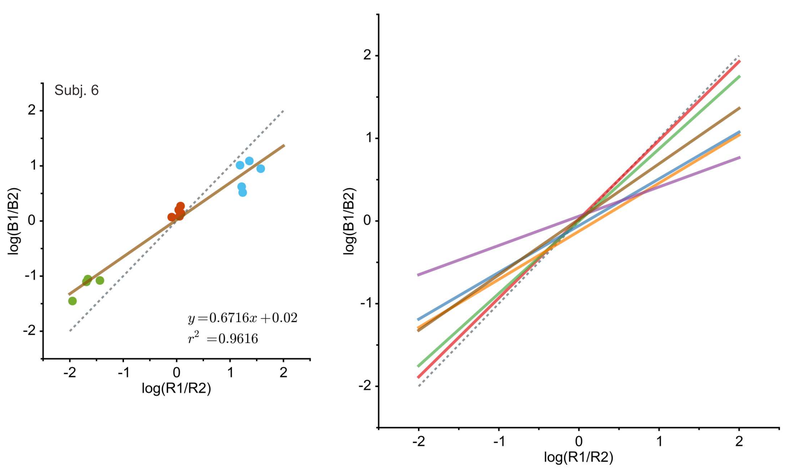
Saccadic latencies are voluntarily controlled



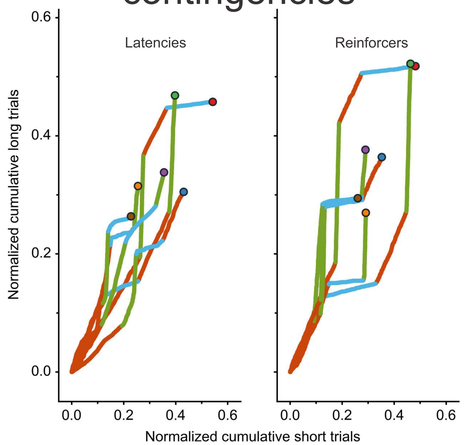
Rates of short and long latencies depend on reinforcement contingencies



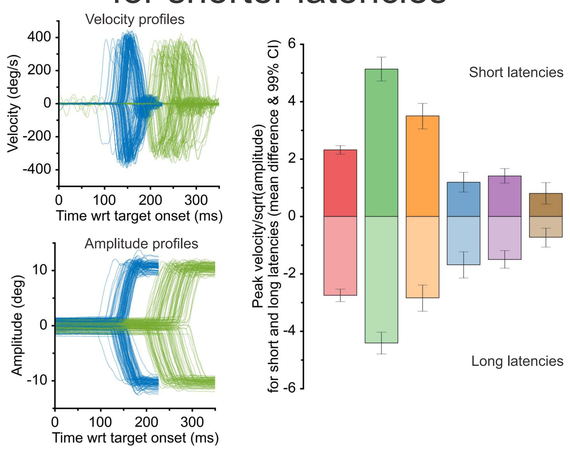
The relative rates of latencies match the relative rates of reinforcers



Choices and reinforcers depend on programmed reinforcement contingencies



Peak velocities are faster for shorter latencies



CONCLUSION

- Saccadic latency distributions changed as a function of reinforcement contingencies.
- Choices between short and long latencies matched reinforcement contingencies.
- Learned contingencies affect the allocation of saccades in time, demonstrating a voluntary control of saccadic latency.

REFERENCES
Madelain, Champrenaut, & Chauvin. (2007). Control of Sensorimotor Variability by Consequences. *Journal of Neurophysiology*.

ANR grant ANR-13-APPR-008 and PhD grant from the French Ministry for Research