***Ahead of the beat: sensorimotor synchronization differs in individuals who stutter***

Anastasia G. Sares,1,3 Mickael L. D. Deroche,2,3 Douglas M. Shiller,3,4 and Vincent L. Gracco1,2,3,5

1. Integrated Program in Neuroscience, Montréal, Quebec, Canada.

2. School of Communication Sciences and Disorders, Montréal, Quebec, Canada.

3. Centre for Research on Brain, Language and Music, McGill University, Montréal, Quebec, Canada.

4. École d’orthophonie et d’audiologie, Université de Montréal, Montréal, Quebec, Canada.

5. Haskins Laboratories, New Haven, Connecticut

One theory behind stuttering is that it is a problem with sensorimotor timing—the ability to react to feedback about our own actions in a timely manner. However, studies trying to demonstrate this deficit have had mixed results. We had individuals who stutter complete a synchronization task (tapping to a metronome), and found that while they could successfully adapt to large changes in tempo, they tended to respond more out of phase with the beat than fluent speakers during steady-state synchronization. In addition, people who stuttered were less consistent than fluent speakers when the tempo was slow. These results support the idea of a sensorimotor timing deficit in stuttering; however, the effect was subtle and conditional, which may explain the ambiguous results in past literature.