

# Rhythmic Preferences and Motor Tapping Precision in ADHD Adults and Controls

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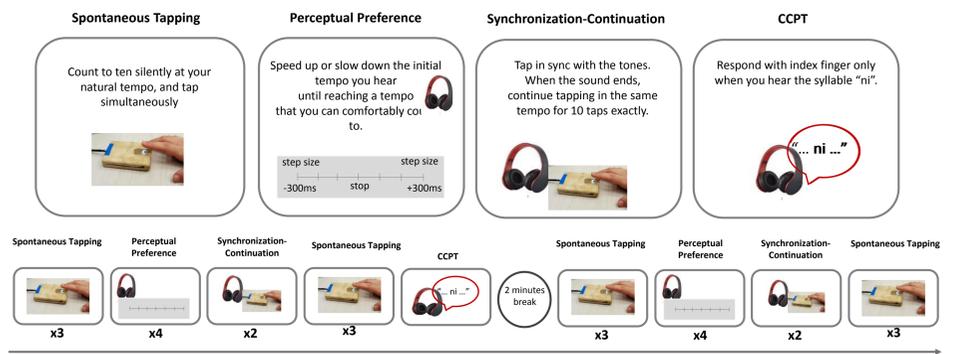
## Background

- Many real-life behaviors involve **rhythm**
- Individuals with **ADHD** exhibit deficits in temporal estimation and timing functions
- According to the **“Preferred Period Hypothesis”** rhythmic perception and production are governed by a personal preference

### Here we ask:

- Do individuals with ADHD exhibit **rhythmic preferences** in perception and motor production? Are they unique? Are they **consistent**?
- Do these preferences **contribute** to rhythmic perception and production?
- Are timing deficits in ADHD related to **internal generation** of rhythm or to deficits in **sensory-motor interactions**?

## Methods



**Participants:** 2 groups- ADHD and Controls, 19 participants in each, age 21-28.

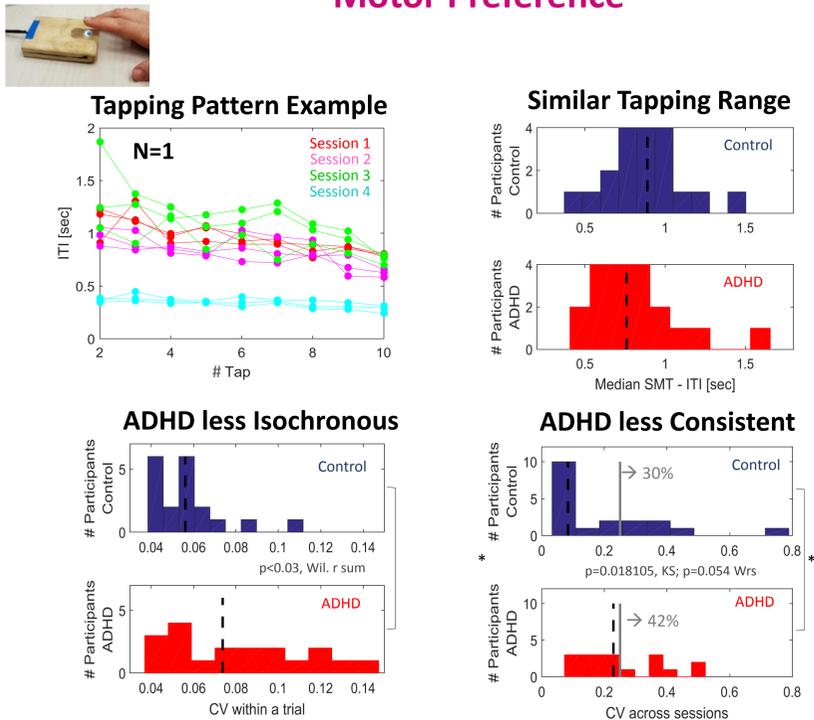
**Synchronization-Continuation Task:** 10 ISIs of 250ms – 2.2sec, feedback to counting in continuation.

**Main renewals:** (1) ‘Counting’ tempo instead of ‘Comfortable’ tempo. Expected to yield increased consistency within and between trials. (2) Include individuals with ADHD. (3) Large ISI range of sub and supra second.

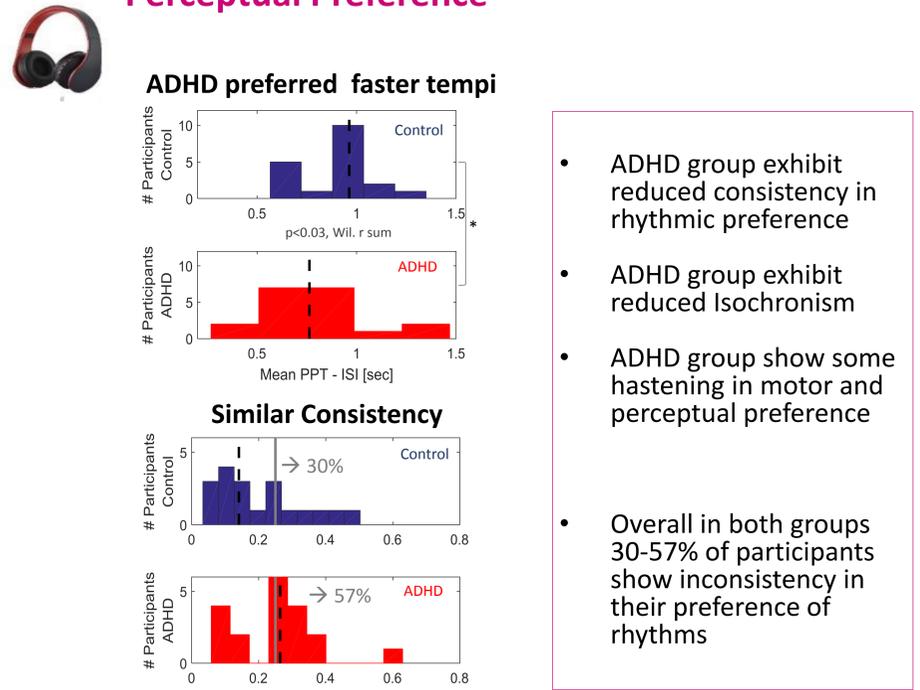
**CCPT Results-** Validated a significant RT variability difference between the groups.

## Results

### Motor Preference

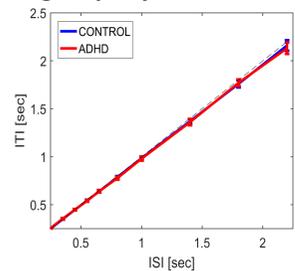


### Perceptual Preference



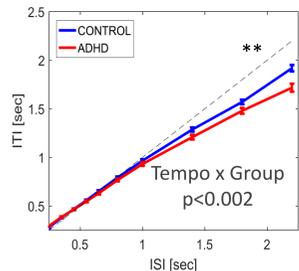
### Synchronization

Both groups sync well at all tempi

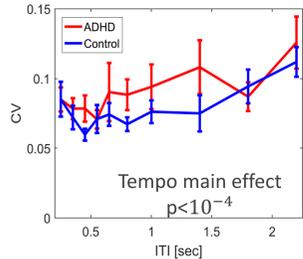


### Continuation

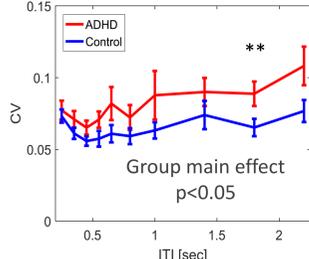
ADHD less accurate at slow tempi



Variability raises at slow tempi

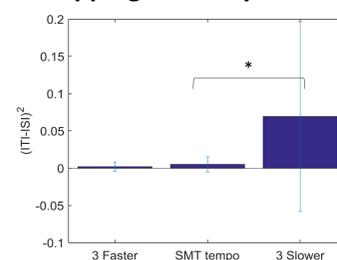


ADHD group more variable

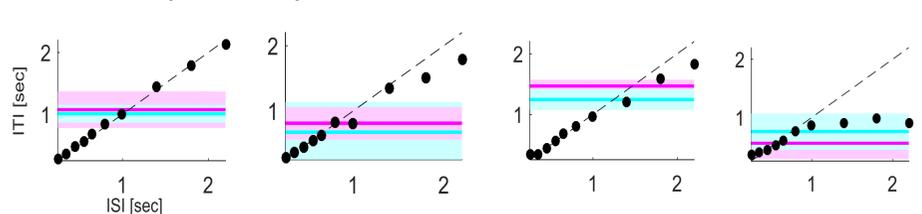


### Rhythmic Preferences do not contribute to Continuation Performance

Tapping Accuracy vs. SMT



Participant Examples for Performance-Preferred Period Interaction



## Conclusions

**Rhythmic Deficits in ADHD:** Individuals with ADHD exhibit **less consistency** in motor and perceptual preference of rhythms, and some tendency for **hastening**. They are primarily **challenged in self-generating** isochronous motor rhythms, during both spontaneous and memory-paced tapping, but **accuracy is fully recovered when synchronizing to external stimuli**.

**New insights regarding the ‘Preferred period Hypothesis’:** The **large variability** across participants in both groups, in Motor and Perceptual consistency, together with the **lack of advantage in continuation-tapping** near so-called ‘preferred’ rhythms, invites a **more nuanced approach** to thinking about rhythmic preferences.