Temporal Duration Judgement of Intervals and Rhythms – an EEG study

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Background

- Estimating time can be generated in different ways for example, judging the rhythmicity of events, or estimating the length of intervals.

Aim

- Are different behavioural and neural processes involved when the same time interval is presented under different task demands? – one meant to prime explicit interval judgment and another aimed at estimations of rhythmicity.

Methods

- 7 Participants, all right-handed, age ranging from 18 to 60
  - **Tactile Stimuli: 50 ms taps to the right index finger**

1. Rhythm Judgement Task

Participants were instructed to attend to the three stimuli and judge whether the stream of three stimuli constituted a regular rhythm (i.e., were the three stimuli synchronized) or not.

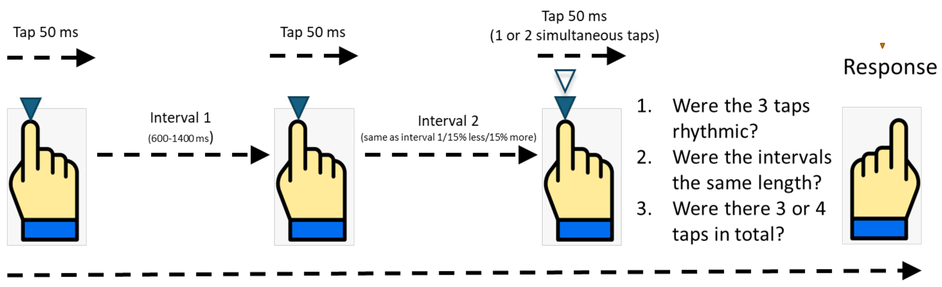
2. Interval Judgement Task

Participants were instructed to attend to the two intervals and judge whether the intervals were the same or different.

3. Perceptual Judgement Task

Participants were instructed to count the number of stimuli presented during the trial.

1. Attend to the rhythm
2. Compare the interval lengths
3. Count how many taps there are



1. Were the 3 taps rhythmic?
2. Were the intervals the same length?
3. Were there 3 or 4 taps in total?

Replication Task

To ensure participants attended to the relevant trial properties 20% of trials were followed by a replication task.

1. For *rhythm judgement*, participants were asked to roughly replicate the three stimuli by pressing the response key three times.

2. For *interval judgement* replication, participants were asked to roughly replicate the two intervals by pressing and holding down the response button twice.

3. For the *perceptual judgement*, participants were asked to replicate the number of stimuli the felt by pressing down on the keyboard the associated number of times.

Results

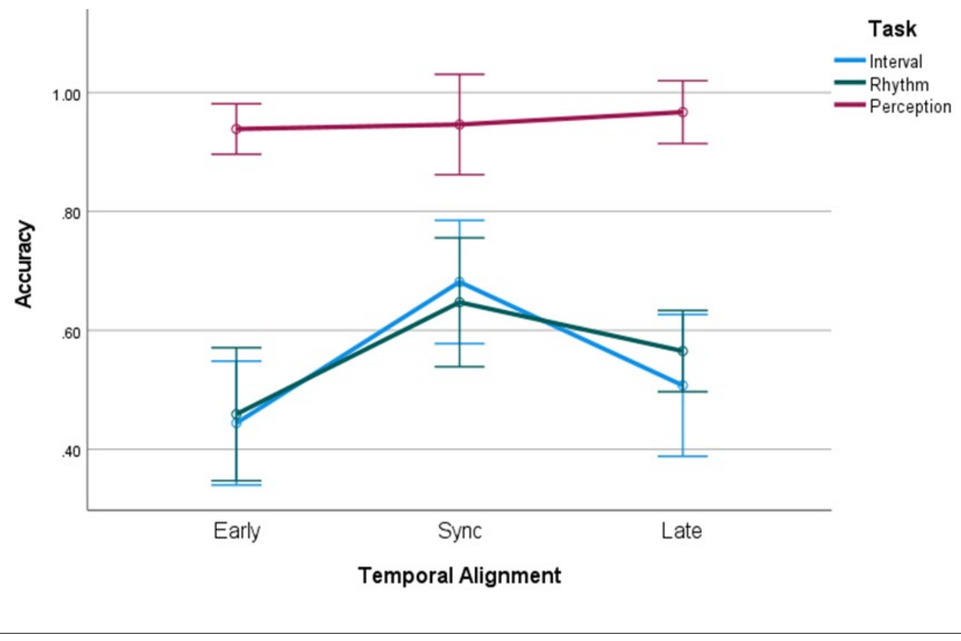
Behavioural:

Accuracy

There was a main effect of Task ($p < .001$), with accuracy greater for the perceptual task.

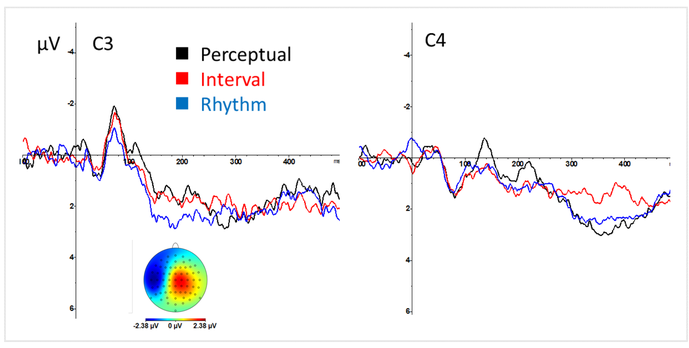
There was a main effect of Temporal Alignment ($p = .002$) with accuracy was greater for synchronised intervals compared to early and late intervals.

There was an interaction between Task and Temporal Alignment ($p = .007$).

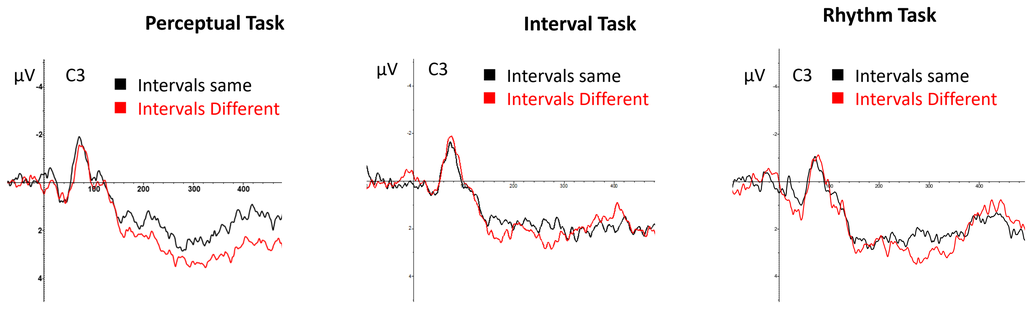


ERP:

ERPs were time locked to the onset of the 3rd stimuli of each trial. Data from the C3 electrode was visually inspected but no analyses have been undertaken.



N80
Potential difference in Rhythm task at N80



Summary

- **Potential difference in accuracy performance between Rhythm and Interval judgements at late intervals**
- **Differences indicated in ERPs at C3**
- **Further data to be collected and additional analyses to carried out**