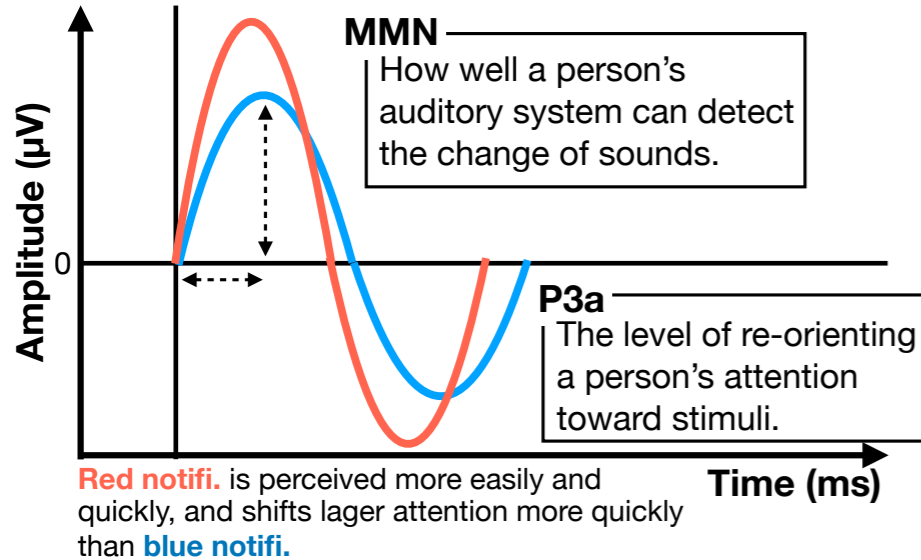


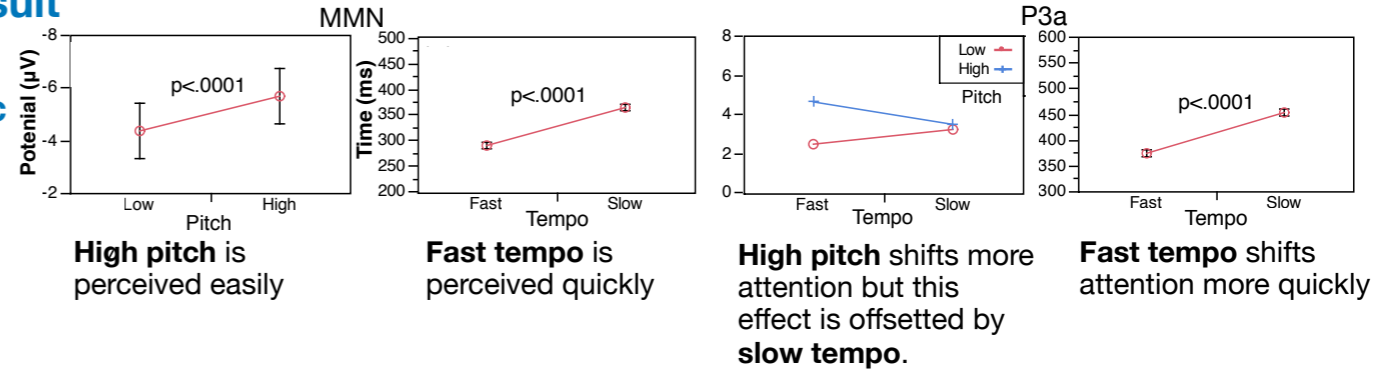
As the growing of using audio notifications, the need of integrating cognitive priorities into the design and evaluation of audio notifications is emphasized in HCI field. We conducted electroencephalography (EEG) and behavioral experiments to understand how the change of **musical parameters** influence users' **auditory perception and attention-shifting**.

## Auditory Perception and Attention-shifting

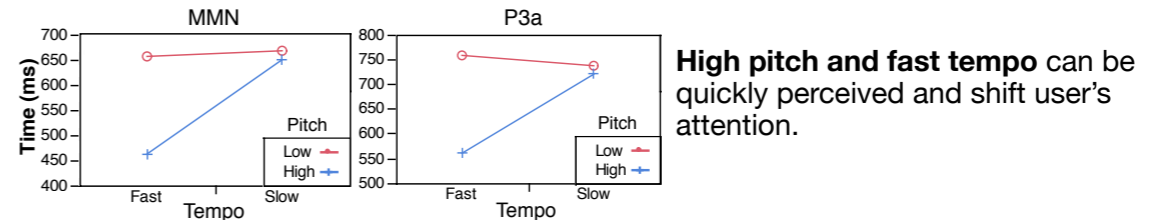


## EEG Result

### Simple harmonic richness



### Complex harmonic richness



## Musical Parameters – 8 Notifications

- **Harmonic Richness:** Simple, Complex.
- **Tempo:** Slow (120 bpm), Fast (200 bpm).
- **Pitch:** Low (original), High (+500 cents).

## Behavioral Results

- **High pitch** notifications have short RT and high Acc.
- **Complex harmonic richness** notifications have long RT but high Acc.
- **Simple harmonic richness and fast tempo** notifications have the shortest RT.

## Experiment



- 20 participants (13 F; age: 20-28); participants watched film in both sessions.
- **Session 1:** Record EEG passively.
- **Session 2:** Ps click mouse when hearing notifications. Record reaction time (RT) and accuracy (Acc).

## Summary & Future Works

- EEG data is more delicate measures of the influence of musical parameters on users.
- Use mapping matrix to estimate how the notifications would influence users.
- Evaluate more musical parameters, ambient sounds, and other forms of cognition.

Mapping Matrix	MMN Amp.	P3a Amp.	RT	Acc
Complex X High				Best
Simple X Low X Fast		Worst		Worst
Simple X High X Fast	Best	Best	Best	
Complex X Low X Fast	Worst		Worst	