Dai & Shinn-Cunningham, 2018:

* **Lagging stream: 200ms after Leading stream**
* In each block, one stream from 0, other from a lateral position
* Focus on either Leading or Lagging (based on visual cue)
* **Streams are isochronous**
* Onset of EACH trial differed
* Hearing threshold of <20dB
* Additional 0.02$ bonus with each correct answer
* Sequences differed in repetition rate, so that EEG responses elicited by onsets of the notes were resolvable in time
* **Leading Stream:**
  + **Sound event duration: 624ms**
  + **ISI: 664ms**
  + **Total: 1288ms (tlo1)**
* **Lagging Stream:**
  + **Delay: 200ms**
  + **Sound event duration: 728ms**
  + **ISI: 758ms**
  + **Total: 1486ms (tlo2)**
* **On and off gating? 🡪 onsets, duration and offsets 🡪 10ms, dur, 100ms**
* **Starting SPL: 70dB**
* **48 trials each block 🡪 10 blocks in total 🡪 480 trials**
* band-pass filtered from 1.8 Hz to 50 Hz🡪 using a 6,000-point finite-impulse response band-pass filter (least-squares brick-wall filter
* calculated ERPs from responses on channel Cz (channel 32 in the 10/20 system). Epochs were extracted from each raw trace, then band-pass filtered from 2 Hz to 25 Hz using the eegfiltfft.m function in EEGLab toolbox (43). Any trial epoch with a peak magnitude greater than 90 μV was rejected to remove artifacts (roughly 3 to 6% of trials were rejected)
* a bootstrap procedure to estimate evoked EEG responses
* took the average of 100 randomly chosen trial epochs, with replacement, chosen from the distribution of artifact-free responses for a given subject and condition. The final estimate was the mean of 200 repeats of this procedure
* N1 magnitude was estimated as the local minimum 90 ms to 220 ms after a note onset, and the P1 magnitude was estimated as the local maximum from 30 to 120ms after the onset🡪 difference in these magnitudes was used to quantify the early neural response for each condition and subject
* For each trial in the auditory selective attention experiment, epochs were defined from 3 s before to 6 s after the auditory stimulus onset was extracted. For the ITD threshold experiment, each trial epoch was defined as 0.5 s before to 1 s after the auditory stimulus onset. For each subject, we calculated the ERP magnitudes separately for large ITD, a small ITD, and 0 ITD trials
* Attention modulated index calculated🡪 normalized difference in neural response to a stream when it is attended to when it is ignored
  + A higher AMI 🡪 P1-N1 magnitude in response to the note is larger when the listener is attending to that stream
* After the first note, Distractor notes overlapped with other streams and tended to produce smaller ERPs. For these reasons, we separately analyzed responses to the first note and the later notes of the Distractor 🡪 which is why I need a delay of second stream

Dai & Shinn-Cunningham, 2016:

* NHTs at frequencies between 250 Hz and 8000 Hz (thresholds of at most 20 dB HL) for both ears
* Stream A and Stream B
* Equal amplitude🡪 70dB SPL (root-mean-squared)
* Repetition Rates chosen carefully🡪 ensure they were not harmonically related to each other or to 60Hz
* Any interference from neural responses to competing streams and any ongoing line noise was random across bins🡪 tended to cancel out
* **Stream A🡪 10 notes**
* **Stream B🡪 8 notes**
* Program recorder the last button push within the response period as the registered answer within that time
* Band-pass filter 2-25Hz
* Focused on channel Cz (32)
* **Epochs: -0.2s until tlo end**
* Maximum absolute peak voltage for each epoch
  + Histogram of peak values across trials , rejected trials in the top 15% of each subject’s distribution
  + Bootstrap🡪 avg ERPs for when Stream A was the target, and when Stream B was the target separately🡪 200-draw bootstrap with replacement (100 trials per draw)
* N1 magnitude 100-220ms, P1 30-100ms after onset
  + Difference computed🡪 avg peak-to-peak P1-N1 magnitude
  + Estimated the P1-N1 magnitude in response to each note onset in Stream A and B when Stream A was the target, and vice versa
  + First notes in each stream omitted
  + M attended expected to be larger than M ignored
* ERP magnitudes vary significantly across subject🡪 the factors cause shifts in measured ERPs that are constant on a logarithmic scale
  + AMI calculated 🡪 computing the difference of the log of the magnitudes of M attended and ignored
  + For each subject
  + As the avg across note onsets (from 2nd not to final note)
  + 1/N-1 Sum N, pi=2 log(M attended/M ignored)
    - N number of notes of s (stream)🡪 sA: N=10; sB: N=8
* Stats:
  + Multi-way ANOVA🡪 mixed effects models
  + Subject-related factors were treated as random effects🡪 were not assumed to comply with homoscedasticity
  + Akaike information criterion🡪 to compare models with and without reach random effect term
  + Data checked for normality using Kolmogorov Smirnov test
  + Looked for correlations between variables
  + Significance tested with pearson correlation coefficient
  + P values using a t-tailed student’s t test
* Exp 1:
  + Stimuli:
    - 11 subjects
    - **Stream A: 10 tones, 200ms duration, ISI= 668ms, tlo1=868ms**
    - **Stream B: 8 tones, 300ms duration, ISI=849ms, tol2= 1149ms**
    - All notes time-windowed with cos-squared onset and offset ramps to reduce spectral splatter🡪 10ms duration
    - **1 block, 40 trials**
    - **1st block training**
    - **7 further blocks for test🡪 280 trials in total**

Antrag Schönwiesner:

* Same voice
* 2 streams 1 and 2
* Rates: 0.8 and 0.95Hz
* Based on Dai and Shinn-Cunningham 2018
* 200 trials motor-only
* 10 min per spatial axis🡪 480 trials each
* ISI 1: 0.5
* ISI 2: 0.3
* Dur of sounds: 0.75
* Tlo1= 0.95
* Tlo2= 1.05