Music 451A – Final Project - Data Recording Sheet

Date (yyyy/mm/dd): _____ Experimenter Name(s): _____

Subject #/Initial: _____ (f/m) ;Handedness (L/R/Amb ; Age: _____ Absolute pitch? (y/n/not sure)

Musician? (y/n) Years of Musical Experience (_____ years); Age of Musical lesson start: _____

Head circumference (Nasion- ear top -Nasion) _____ cm; Capsize (Large (>59)/Medium /Small (<55)

Nasion to Inion distance: _____ cm; 10% point: _____ cm (→ Fpz); 50% point: _____ cm (→ Cz)

PreAuricular (PA) – PA1 (left) to PA2 (right) distance: _____ cm; 10% point: _____ (T3/T4)

EEG Data Acquisition (In Curry 7) Configuration: Quik Cap64_VH500 (- sampling rate 500Hz)

Study 1: Binaural processing by temporal envelope and the effects of carrier frequencies

Group: Wisam & Nick

Goal: to observe change response inserted in the middle of the long AM tone where diotic switches to dichotic sound.

Stimuli: 40Hz-AM tones with four carrier frequencies (500, 1000, 2000, and 4000 Hz). From the onset to 2 second, the stimulus is diotic. At the 2 second the prolonged AM envelope by 1.5 ms is inserted only in the right channel (the AM envelope is switched to a lower frequency 31.8471 Hz), resulting in the temporal envelope difference between the left and right ear inputs. Note that the carrier frequency phase was kept identical between the ears throughout the tone duration. The last part of the sound was ramp-ed both ears with 6.25 ms cosign curve.

Sound intensity is set at 80 dB SPL but calibrated according to ELC characteristics and the averaged hearing threshold using STIM2.

Stimulus file (GENTASK in STIM2): C:\Experiments\Stim\M451A_Final\Binaural\Bin_500.seq, Bin_1000.seq, Bin_2000.seq, Bin_4000.seq

Trigger code: 500Hz:1, 1000Hz:2, 2000Hz: 3, 4000Hz: 4

Filename: D:\M451A_F15\Final\Binaural*SubjectInitial**SubjectInitial*_01-08.dat

	Use one of these four orders	Start time

Bin_500	run1				
Bin_1000	run2	run1			
Bin_2000	run3	run2	run1		
Bin_4000	run4	run3	run2	run1	
Bin_500	run5	run4	run3	run2	
Bin_1000	run6	run5	run4	run3	
Bin_2000	run7	run6	run5	run4	
Bin_4000	run8	run7	run6	run5	
Bin_500		run8	run7	run6	
Bin_1000			run8	run7	
Bin_2000				run8	
Bin_4000					

Notes：

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Analysis:

1. Long epoch (-0.5 to 4.5) for the whole time window to observe the onset, change, and offset responses and sustained potential (DC offset -0.1 - 0)

2. Short epoch (-1.8 to 2.5) to see the change response and evaluate the amplitude in one of the midline channel (Cz, FCz, or Fz) in each individual for each condition

3. Grand average plot (time series and topography of N1 peak for the onset and change response from the long epoch)

4. Table of the individual amplitude of the change N1 peak for all the conditions

5. Line plot of the group average amplitude of N1 peak (from the short epoch) with the error bar (S.E.M) as a function of the carrier frequency

Study 2: Melodic pattern modulation and the effect of repetetion regularity

Group: Tysen & Audrey

Goal: to compare MMN attenuation over the course of the block between the constant repetition condition and the variable repetition condition in which different melodies (4-note) are used such that each repeats in a row five times (constant) or three, four, five, six, or seven times (variant). The melody consists of four notes, each come in every 250ms. Each note has a duration of 180ms. Synthesized piano timbre. The melodies are presented without any gap between.

Stimulus file: C:\Experiments\Stim\M451A_Final\PatternModulation\Constant.seq, Variant.seq

Trigger code: Deviants in the constant condition: 11, 21, 31, 41, 51. Standard is one stimulus before the deviant. Deviants in the variant condition: 111,121, 131, 141, 151.

EEG Data Filename: D:\M451A_F15\Final\PatternModulation*SubjectInitial**SubjectInitial*_01-04.dat

	Use one of these two orders		Start time
Constant	run1		
Variant	run2	run1	
Constant	run3	run2	
Variant	run4	run3	
Constant		run4	

Notes: _____

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Analysis:

Epoch: -0.2 to 0.3 around Deviant, and Standard (one melody before Deviant – note that you have to do time offset for Standard before making the difference waveform)

Trials: early and late (the first half and second half) OR (the first third and the last third)

Conditions: Early-Constant, Early-Variant, Late-Constant, Late-Variant

1. Standard, Deviant, and difference waveforms (all channels, and the peak channel based on the grand average topography – perhaps Cz, or Fcz or something else) for each condition

2. Topographic maps at MMN peak latency (standard, deviant, and difference) for each condition

3. Table of the individual amplitude in the peak channel for all four conditions

4. Bar plot of the group mean amplitude of MMN in the all conditions

Study 3: Learning of Feature-binding rule for target detection

Goal: to observe P3b for the target detection, and compare it between the task of detecting a prescribed target by a combination of two acoustic features vs. the task of figuring out which combination defines a target that changes after a short block of trials with a warning visual signal.

Stimuli: short tone pairs (180 duration +70 ms gap + 180 duration) are made using a combination of two features (timbre and contour). Timbre is either piano or marinba, the contour is upward or downward. Pitch of the notes are randomly chosen from E5 to C6. Interval varies between 3rd to 5th. At each trial, a tone pair is presented with a simultaneous visual stimuli of letters (PT, or NT). 'PT' means that the auditory stimulus contains a target feature, whereas 'NT' means that none of a target feature is relevant. Subject has to count the number of target at each short blocks and report the

Stim file: C:\Experiments\Stim\M451A_Final\FeatureLearning\ChangeTarget.seq, ConstantTarget.seq

Trigger code: Change condition: Target (11), Partial-target (12), Non-target (13),

Constant condition: Target (21), Partial-target (22), Non-target (23)

EEG Data Filename: D:\M451A_F15\Final\Learning*SubjectInitial**SubjectInitial*_01-04.dat

		Use one of these two orders				Start time
Constant	run1	Reported target count				
Change	run2	Reported target count	run1	Reported target count		
Constant	run3	Reported target	run2	Reported target		

		count		count	
Change	run4	Reported target count	run3	Reported target count	
Constant			run4	Reported target count	

Notes: _____

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Analysis:

Epoch: -0.2 to 1.0

Trials: early and late (the first half and second half)

Conditions: Early-Constant, Early-Change, Late-Constant, Late-Change

1. Target ERP waveforms (all channels, and the peak channel based on the grand average topography of P3b– perhaps Cz, Cpz, or Pz) for each condition

2. Topographic maps at P3b peak latency for each condition

3. Table of the individual amplitude in the peak channel for all four conditions

4. Bar plot of the group mean amplitude of P3b in the all conditions