MPATC-GE 2042:
Psychology of Music

Music and the Brain
Assignment reminder

• **Experiment design** – NEW DEADLINE: *Sunday, November 11 at 11:55pm*

• The experiment design includes (1) a very specific research hypothesis related to your research topic and (2) the design for an experiment to verify or refute your hypothesis. The hypothesis should be informed by what you have learned from the literature review process. It should be framed in a way that, when tested properly, will offer new information or help answer a research question in your topic area. In your experiment design write-up, you must address the following:
  
  • Explain why your research question has value to the field
  • Point to a gap in current state of the art (as described in your literature review) that you are trying to address with your research question
  • Translate that research question into a testable hypothesis
  • Present a design for an experiment to test that hypothesis
  • Make sure you use APA citation style and include at the end of your text a list of any references you cited
• The design section must be broken down into the following sub sections:
  – General overview of the methodology (e.g., the philosophy behind your approach)
  – Participants: A description of the subjects you expect will participate in your study. Include the expected number of participants and estimated averages and standard deviations of appropriate descriptive statistics (e.g., estimated age, number of years of instrumental training, number of years of music theory training, etc.—these will eventually be replaced by real numbers after you run your experiment)
  – Materials: A precise description of the stimuli
  – Procedure: A step-by-step outline of how the experiment will be run and what you will be asking subjects to do. This should also include a description of the equipment you plan to use and any other experimental interfaces (type of computer, software applications, headphones, speakers, etc.)
Some terms

- Cerebral cortex – “gray matter”
- Sulci (singular sulcus)
- Gyri (singular gyrus)
- Orientation – see image
  - Also: medial vs. lateral used to differentiate between the center and the edge.
- Primary auditory cortex (A1/Heschl’s gyrus)
- Wernicke’s area
- Broca’s area

Intro to EEG
Intro to EEG
Intro to MEG
Intro to fMRI
Article discussion: Peretz et al. 2009

• Discussion leaders: Pei Chang and Shannon Elliott
Reading question: Impact of amusia

- The study contributes important knowledge about the amusic brain, but it does not really touch the social implications of being tone deaf. Does amusia make it substantially harder to learn an instrument (especially when music teachers may be unaware it is a real condition)? Does amusia affect enjoyment of music and therefore one's daily and social life in which music is regularly on? (Willie)
Reading questions: Amusia, emotion, and tonal languages

• In what ways could individuals with amusia derive musical emotions differently from compared to someone without the condition?

• Could amusia affect the speakers of a tonal language in the same ways as atonal speakers? If so, would atonal speakers be more susceptible to amusia? (Mihir)
Reading question: Familiarity with other musical systems with quarter tones

- Although the participants, according to what the researchers state, were unfamiliar with the melodies played. It is not mentioned if the participants were unfamiliar with other types of tuning systems such as the Indian or Arab, which both use quarter tones. Do you consider this as an important factor in the experiment? What would happen if the participants were familiar with this tonal systems or what would happen if the melodies used belonged to this systems? Would we still consider the alterations “incongruent”? (Julian T.)
• Do you think that amusic subjects would have more success and/or confidence in identifying out of key and out of tune notes in melodies that are longer or not isolated? If melodies were longer or given more musical context (a melody over a chord progression, for example), would there be a point where amusic subjects would be able to activate key schemas? If so, how much and what kinds of contextual cues are necessary? Might this depend on the individual? (Tyler)
Reading question: Amusia and emotion

• How do these amusic brains interpret emotion in music? (Jess)
Reading question: Amusia vs. pitch production problems

• What is the relationship between amusia and the inability to accurately reproduce pitches vocally? Are people that are considered "tone deaf" more likely to be amusic or simply have a problem with pitch reproduction? (Max)
Reading question: Stimuli issues

• In the text, the authors list the 'target tone', i.e. the altered note, as consistently being the first note of the third bar. Since subjects are hearing these altered melodies more than once among the 160 stimuli, could they recognize this pattern of some melodies having an altered note at this exact moment? If so, could this influence the data in an unintended way? (Julian C.)