PSYC 489x (Spring, 2022) – Advanced Special Topics: *Music Perception and Cognition*

When & Where: Tuesday & Thursday, 9:30- 10:45am, BPS 1236
Instructor: L. Robert Slevc (he/him) – slevc@umd.edu
Office Hours: by appointment: BPS 1147-E (or virtual)
Webpage: http://elms.umd.edu

Course Description

Music pervades our lives. We listen to music at home, in the car, at restaurants, parties, and bars. Music plays in retail stores and coffee shops, in the gym, and on TV. We go to concerts, dance to music at clubs, sing karaoke, and even create new music and perform in public. During pandemic times, we still sing in the shower and listen to music (and, in fact, some evidence suggests that listening to music might help us deal with the relative isolation of pandemic-related quarantines). We spend a lot of money and time on music too – according to a 2017 Nielsen poll, the average American spends over 32 hours per week listening to music. This behavior is neither unusual nor recent: every known human culture uses music in some form, and archeological evidence suggests we have been involved in music for much of our history (e.g., bone flutes have been discovered dating from about 40,000 years ago and singing probably emerged even earlier).

In this seminar course, we will explore the psychological foundations of musical behavior. Specifically, we will discuss scientific work investigating how people perceive, remember, enjoy, and use music. This will include evidence from the development of musical abilities, from musical deficits, from comparative studies of musically relevant behaviors in other species and from other human behaviors (e.g., relationships between music & language).

The ability to read and/or perform music is not required for this course.

Learning Outcomes

After taking this course, you should

- understand theories, debates, and research related to the perceptual, cognitive, and neural processes involved in musical behavior
- understand how musical behavior changes over the lifespan
- think critically about how music can affect cognitive, social, and emotional states, and how musical behavior relates to mental health and wellbeing
- know and use effective strategies to read and understand primary scientific literature (both on music psychology and in general)
- critically evaluate the implications and limitations of behavioral and neuroscientific research on music and be able to communicate relevant research findings clearly and accurately

Readings

Williamson, V. (2015). *You Are the Music: How Music Reveals What It Means to be Human.* London: Icon Books (abbreviated below as *YATM*)

This book provides some general background and the organization for much of the course. In addition to this book, we will read a variety of articles and/or chapters each week. PDFs of these will be posted on the course website at least one week in advance.

Course Requirements.

1. **Participate** (15%). This is a seminar/discussion class, and so you are expected to come to class prepared to discuss the readings and to contribute to discussion. More is not always better, but engagement is necessary. Participation grades will be based on your preparation to discuss the readings and the relevance of your comments to the discussion.
2. **Generate discussion topics** (15%). To help you prepare for class, you should post comments on / responses to the readings before each class. These should be relatively short (≤ 200 words) and could include thoughts about how the readings relate to each other, questions about the interpretation of data or theoretical claims, or questions about how the data/claims can be reconciled with other findings.
    - You should post these comments on the webpage discussion board by **9pm the day before each class meeting** (i.e., 9pm on Monday & Wednesday) by clicking under the topic heading and adding your entry as a new thread. You are encouraged to read (and respond to) other peoples' comments before class.
3. **Lead discussions** (25%). You will lead discussion of several topics over the term (exactly how many will depend on enrollment). You are not required to lecture, as all members of the class will be expected to participate. Instead, you will guide the conversation, stimulate discussion, and be ready to clear up misunderstandings (e.g., be prepared to explain graphs, play example stimuli when available, etc.). It will often be useful to begin with a short review of the paper(s) and then introduce questions (several of which will likely be drawn from your classmates' posted discussion comments) to encourage & guide discussion.
    - Topics/days will be assigned via a bidding process: By enrolling in this course, you get 100 *Music Cognition Bucks* (100 MCB; actual value = $0) to bid on topics. I will allocate topics to the highest bidders as fairly as I can. A few rules:
        - You can only bid between 0 and 20 MCB per topic,
        - You should bid on at least 8 different topics (more is fine)
        - Your bids should total 100

      The link to the bidding form will be posted on ELMS. Your bids are due at **noon** on **Thursday, January 27th**.
4. **Communicate some music-science.** Over the semester, you should write and peer-edit three blogposts (or podcasts or another format, with instructor approval) on recent research on music perception/cognition. *For each of these three assignments,* you should:
    a. **Create blogposts about a recent finding on music perception/cognition** (25%). These should each describe the findings of a recent primary source article about music perception/cognition (ideally referring to additional relevant sources as well). You should target an intelligent, but non-expert, audience; i.e., these should be engaging, informative, and accessible. For *one* of these assignments, you may describe a (recently published) article we have already read/discussed in class; otherwise, you should either select from a list of options that I will provide or find your own articles (but please check with me first to make sure your choices are appropriate for the assignment). I expect these posts to be around 3-4 typed pages (double-spaced) or to contain about that amount of information

in another format. They are due on **February 22nd, March 29th,** and **April 26th**. I encourage you to take advantage of UMD's Writing Center for these assignments.

b. **Review / peer-edit other students' blogposts/podcasts** (10%). Following each of the above due dates, you will get one of your classmates' assignments to review. You should read their assignment and the corresponding primary article, then submit a short evaluation of the blogpost content and the format/accessibility. (Note that you will not need to assign a grade; just offer comments and constructive criticism.) These reviews are due one week from the initial assignment's due date.

5. **Revise your favorite two blogposts/podcasts into publication-ready form** (10%). In lieu of a final exam, you should submit revised and publication-ready versions of your two favorite blogposts from (4) above. These should incorporate comments/suggestions from your classmates and from me and should be formatted to be posted online. (Info will be forthcoming on the blog platform for the class). These should be posted online before **10 am on Friday, May 13th** (the scheduled end time for the final exam). Please proofread your final products carefully and follow appropriate attribution / copyright policies for images and any other sources you use.

Course Policies

This course is subject to university-wide policies for undergraduate courses, detailed at http://www.ugst.umd.edu/courserelatedpolicies.html. These include policies on academic integrity, student conduct, sexual misconduct, discrimination, accessibility, attendance, absences, missed assignments, student rights, official UMD communications, midterm grades, complaints about final exams, copyright and intellectual property, final exams, course evaluations, and campus resources. A few details specific to this class:

- **Attendance:** This is a discussion-based seminar course, so attendance is important. Excused absences (described via the link above) will be granted when appropriately documented. *NB: given COVID, I will be lenient on what counts as documentation. Please do not come to class if you are feeling unwell.* We will attempt to accommodate online attendance when necessary and I will drop your two lowest participation scores, effectively allowing two 'unexcused' absences.
- **Inclusive Learning Environment:** Diverse opinions are welcome and will probably lead to more interesting discussions. However, respectful communication is expected, even when expressing differing perspectives. Supporting one's statements with research findings is encouraged. In accordance with free speech statutes, speech that contains threats of violence is prohibited.
- **Grading:** Your final letter grade will correspond to the weighted sum of the grades for the course requirements listed above[1] as follows:

Letter grade breakdown (lower cutoff scores)

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-
OMG	93.0%	90.0%	87.0%	83.0%	80.0%	77.0%	73.0%	70.0%	67.0%	63.0%	60.0%

Late assignments will be penalized by one grade step per day late (e.g., an A- assignment turned in within 24 hours after the due date would receive a B+). Formal grade disputes must be submitted in writing within one week of receiving the grade.

[1] i.e., .15 × participation + .15 × discussion posts + .25 × discussion leading + .25 × blogposts + .10 × peer reviews + .10 × final revised blogposts

Topics and readings

A tentative schedule of topics and readings is listed below. *Note that this is subject to change – please monitor the course webpage for updates.*

(Remember: discussion posts are due by 9PM on Monday/Wednesday before we meet)

Date	Day	Topic

1 – 1/25 (Tu) Organizational issues & introductions

2 – 1/27 (Thu) What is music?

1. Levitin, D. J. (2006). What is music? In *This is Your Brain on Music: The Science of a Human Obsession* (Chapter 1; pp. 13-53). New York: Penguin.
    a. *Optional:* Levitin (2006) introduction (pp. 1-12).
2. Carey, M. A., Steiner, K. L., & Petri Jr, W. A. (2020). Ten simple rules for reading a scientific paper. *PLoS Computational Biology 16*(7): e1008032.

3 – 2/1 (Tu) Auditory perception (of musical sounds)

1. Lotto, A., & Holt, L. (2011). Psychology of auditory perception. *Wiley Interdisciplinary Reviews: Cognitive Science*, *2*(5), 479-89.
2. Pressnitzer, D., Suied, C., & Shamma, S. (2011). Auditory scene analysis: the sweet music of ambiguity. *Frontiers in Human Neuroscience*, *5*, 158.

4 – 2/3 (Thu) First musical steps

1. *YATM* Chapter 1
2. Burke, K. L. (2015). 12 Tips for Scientists Writing for the General Public. *American Scientist.* https://www.americanscientist.org/blog/from-the-staff/12-tips-for-scientists-writing-for-the-general-public

5 – 2/8 (Tu) Early musical development

1. Winkler, I., Háden, G. P., Ladinig, O., Sziller, I., & Honing, H. (2009). Newborn infants detect the beat in music. *Proceedings of the National Academy of Sciences*, *106*(7), 2468-71.
2. Hannon, E. E., Schachner, A., & Nave-Blodgett, J. E. (2017). Babies know bad dancing when they see it: Older but not younger infants discriminate between synchronous and asynchronous audiovisual musical displays. *Journal of Experimental Child Psychology, 159*, 159-74.

6 – 2/10 (Thu) Music in childhood

1. *YATM* Chapter 2
2. Mehr, S. A. (2015). Miscommunication of science: music cognition research in the popular press. *Frontiers in Psychology*, *6*.

7 – 2/15 (Tu) Music & non-musical abilities

1. Sala, G., & Gobet, F. (2017). When the music's over. Does music skill transfer to children's and young adolescents' cognitive and academic skills? A meta-analysis. *Educational Research Review*, *20*, 55-67.
2. Mosing, M. A., Madison, G., Pedersen, N. L., & Ullén, F. (2016). Investigating cognitive transfer within the framework of music practice: Genetic pleiotropy rather than causality. *Developmental Science*, *19*(3), 504-12.

8 – 2/17 (Thu) Music and social processes

1. Kirschner, S., & Tomasello, M. (2010). Joint music making promotes prosocial behavior in 4-year-old children. *Evolution and Human Behavior*, *31*(5), 354-64.
2. Soley, G., & Spelke, E. S. (2016). Shared cultural knowledge: Effects of music on young children's social preferences. *Cognition*, *148*, 106-16.

9 – 2/22 (Tu) Music in adolescence *(blogpost #1 due)*

1. *YATM* Chapter 3

10 – 2/24 (Thu) Musical use & preferences

1. Berger, J., & Packard, G. (2018). Are atypical things more popular? *Psychological Science, 29*(7), 1178-84.
2. Fink, L. K., Warrenburg, L. A., Howlin, C., Randall, W. M., Hansen, N. C., & Wald-Fuhrmann, M. (2021). Viral tunes: changes in musical behaviours and interest in coronamusic predict socio-emotional coping during COVID-19 lockdown. *Humanities and Social Sciences Communications, 8*(1), 1-11.

11 – 3/1 (Tu) The musical adult *(peer-feedback #1 due)*

1. *YATM* Chapter 4

12 – 3/3 (Thu) Musical plasticity

1. Herholz, S. C., & Zatorre, R. J. (2012). Musical training as a framework for brain plasticity: behavior, function, and structure. *Neuron, 76*(3), 486-502.
2. Krishnan, S., et al. (2018). Beatboxers and guitarists engage sensorimotor regions selectively when listening to the instruments they can play. *Cerebral Cortex*, *28*(11), 4063-79.
3. Steele, C. J., & Zatorre, R. J. (2018). Practice makes plasticity. *Nature Neuroscience, 21*(12), 1645-6.

13 – 3/8 (Tu) Musical deficits

1. Stewart, L., von Kriegstein, K., Warren, J. D., & Griffiths, T. D. (2006). Music and the brain: disorders of musical listening. *Brain*, *129*(10), 2533-53.
2. Peretz, I. (2016). Neurobiology of Congenital Amusia. *Trends in Cognitive Sciences*, *20*(11), 857-67.

14 – 3/10 (Thu) Musical deficits 2

1. Holmes, J. A. (2017). Expert Listening beyond the Limits of Hearing: Music and Deafness. *Journal of the American Musicological Society*, *70*(1), 171-220.
2. Thakur, D., Martens, M., Smith, D. S., & Roth, E. A. (2018). Williams syndrome and music: A systematic integrative review. *Frontiers in Psychology, 9,* 2203.

15 – 3/15 (Tu) Music at work

1. *YATM* Chapter 5

16 – 3/17 (Thu) Music while doing stuff

1. Gonzalez, M. F., & Aiello, J. R. (2019). More than meets the ear: Investigating how music affects cognitive task performance. *Journal of Experimental Psychology: Applied, 25*(3), 431-444.

2. Threadgold, E., Marsh, J. E., McLatchie, N., & Ball, L. J. (2019). Background music stints creativity: Evidence from compound remote associate tasks. *Applied Cognitive Psychology.*

--- spring break ---

17 – 3/29 (Tu) Cross-modal music perception *(blogpost #2 due)*

1. Sacks, O. (2010). The key of clear green: Synesthesia and music. In *Musicophilia: Tales of Music and the Brain*. (Ch 14; pp. 165-83). New York NY: Alfred A Knoff.
2. Guetta, R., & Loui, P. (2017). When music is salty: The crossmodal associations between sound and taste. *PloS one*, *12*(3), e0173366.

18 – 3/31 (Thu) Music at play *(peer-feedback #2 due)*

1. *YATM* Chapter 6

19 – 4/5 (Tu) Music and emotion 1

1. Cohen, A. J. (2013). Film music and the unfolding narrative. In M. A. Arbib (Ed.) *Language, Music and the Brain* (pp. 173-202). Cambridge, MA: MIT Press.
2. Ziv, N. (2016). Music and compliance: Can good music make us do bad things? *Psychology of Music, 44*(5), 953-66.

20 – 4/7 (Thu) Music and emotion 2

1. Belfi, A. M., & Loui, P. (2020). Musical anhedonia and rewards of music listening: current advances and a proposed model. *Annals of the New York Academy of Sciences, 1464*(1), 99-114.
2. Yoon, S., Verona, E., Schlauch, R., Schneider, S., & Rottenberg, J. (2020). Why do depressed people prefer sad music? *Emotion, 20*(4), 613–624.

21 – 4/12 (Tu) Music and memory

1. *YATM* Chapter 7

22 – 4/14 (Thu) Musical Imagery

1. Zatorre, R. J., & Halpern, A. R. (2005). Mental concerts: musical imagery and auditory cortex. *Neuron*, *47*(1), 9-12.
2. Berger, J. (2015). The necessity of musical hallucinations. *Nautilus, 020* https://nautil.us/issue/20/creativity/the-necessity-of-musical-hallucinations

23 – 4/19 (Tu) Music and memory 2

1. Levitin, D. J., & Rogers, S. E. (2005). Absolute pitch: perception, coding, and controversies. *Trends in Cognitive Sciences*, *9*(1), 26-33.
2. Samson, S., Clément, S., Narme, P., Schiaratura, L., & Ehrlé, N. (2015). Efficacy of musical interventions in dementia: methodological requirements of nonpharmacological trials. *Annals of the New York Academy of Sciences*, *1337*(1), 249-55.

24 – 4/21 (Thu) Musical savants?

1. Sacks, O. (2010). Two Thousand Operas: Musical Savants AND An Auditory World: Music and Blindness. In *Musicophilia: Tales of Music and the Brain*. (Chs 12 & 13; pp. 151-64).
2. Heaton, P. (2009). Assessing musical skills in autistic children who are not savants. *Philosophical Transactions of the Royal Society B, 364*(1522), 1443-7.

25 – 4/26 (Tu) Music and well-being *(blogpost #3 due)*

1. *YATM* Chapter 8

26 – 4/28 (Thu) Music and rehabilitation *(peer-feedback #3 due)*

1. Sihvonen, A. J., Särkämö, T., Leo, V., Tervaniemi, M., Altenmüller, E., & Soinila, S. (2017). Music-based interventions in neurological rehabilitation. *The Lancet Neurology*, 648-60.
2. Tang, Q., Huang, Z., Zhou, H., & Ye, P. (2020) Effects of music therapy on depression: A meta-analysis of randomized controlled trials. *PLoS ONE 15*(11): e0240862.

27 – 5/3 (Tu) Music across cultures 1

1. Jacoby, N., et al. (2020). Cross-cultural work in music cognition: Challenges, insights, and recommendations. *Music Perception*, *37*(3), 185-195.
2. McPherson, M.J., Dolan, S.E., Durango, A. et al. (2020). Perceptual fusion of musical notes by native Amazonians suggests universal representations of musical intervals. *Nature Communications 11,* 2786.

28 – 5/5 (Tu) Music across cultures 2

1. Mehr, S. A., et al. (2019). Universality and diversity in human song. *Science* 366.6468.
3. Beier, E. J., Janata, P., Hulbert, J. C., & Ferreira, F. (in press). Do you chill when I chill? A cross-cultural study of strong emotional responses to music. *Psychology of Aesthetics, Creativity, and the Arts*.

29 – 5/10 (Thu) Music across species

1. Wilson, M., & Cook, P. F. (2016). Rhythmic entrainment: why humans want to, fireflies can't help it, pet birds try, and sea lions have to be bribed. *Psychonomic Bulletin & Review*, *23*(6), 1647-59.
2. Norman-Haignere, S. V., Kanwisher, N., McDermott, J. H., & Conway, B. R. (2019). Divergence in the functional organization of human and macaque auditory cortex revealed by fMRI responses to harmonic tones. *Nature Neuroscience.*