**Informed Consent Form**

Title: The effect of explicit learning on expectations and uncertainty in serial music

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You are invited to take part in a research project entitled “The effect of explicit learning on expectations and uncertainty in serial music.”

This form is part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. It also describes your right to withdraw from the study. In order to decide whether you wish to participate in this research study, you should understand enough about its risks and benefits to be able to make an informed decision. This is the informed consent process. Take time to read this carefully and to understand the information given to you. Please contact the researcher, Sarah Sauvé, if you have any questions about the study or would like more information before you consent.

It is entirely up to you to decide whether to take part in this research. If you choose not to take part in this research or if you decide to withdraw from the research once it has started, there will be no negative consequences for you, now or in the future.

**Introduction:**

This study is being run by Sarah Sauvé, Postdoctoral Fellow in the Cognitive Aging and Auditory Neuroscience Lab (CAANLab) at Memorial University of Newfoundland. Our lab investigates the neuroscience of aging and hearing as well as the neuroscience of learning processes.

**Purpose of Study:**

In this study, we are testing the theory of predictive coding (PC) as it applies to the perception of atonal, specifically serial, music. Predictive coding is a framework explaining brain function. In this framework, the brain processes prediction error caused by a mismatch between its predictive models and incoming real-world information. Two types of predictions are generated: the contents of the event (what, when) and the likelihood of this event happening. The former is referred to as the 'prediction' while the latter is called 'precision'. It is possible to be very certain about something and be completely wrong as much as it is possible to guess and be correct!

Since the vast majority of music possess tonal hierarchy and Western listeners’ predictions are tailored to such a system, the PC framework predicts low prediction and precision for serial music. However, we are curious to see if this changes with explicit learning about and intentional exposure to serial music. The PC framework predicts better prediction but precision will remain low, where listeners end up ‘expecting uncertainty’. We will compare human data to a computational model called IDyOM (information dynamics of music) based on prediction and precision to see how well this model can imitate human performance. It does well for tonal music but has not been evaluated for atonal styles. This study is pre-registered on the Open Science Framework (OSF; <https://osf.io/ab9dg>) and contains background information as well as design and planned analysis; all anonymized data and results will be uploaded to the OSF project (<https://osf.io/kqzg8/>), in line with open science practices.

**What You Will Do in this Study:**

This study is divided into two parts: one in the first two weeks of the course (before you’ve been exposed to and studied serial music) and one in the last two weeks of the course (after serial music). In both, you will be asked about your exposure and familiarity with serial music and perform three different ratings tasks answering three different questions while you listen to monophonic serial music phrases one note at a time. The questions are: 1) how surprising was the last note?; 2) how good of an ending was the last note?; and 3) how sure are you of what note is coming next? There are eight phrases in each session. You’ll be sitting in a double-walled sound proof booth and will be listening via over ear headphones. In addition, in the first part you will share some demographic information (age, gender, musical background) and in the second part you will be asked a few questions about your exposure to serial music and how your listening might have changed from the first to the second part. The study will be conducted with Dr. Sauvé or Alex Cho, a lab research assistant.

**Length of Time:**

This study should take about an hour for each session, for a total of 2h.

**Compensation:**

To thank you for your time, you will be compensated $10 upon completion of each portion of the study, for a total of $20. If you choose to withdraw, you will be compensated for the amount of time spent on the study.

**Withdrawal from the Study:**

If at any time you wish to withdraw from the study, you may do so without giving any reason. You will be compensated for the amount of time you have spent on the study. Your data will be deleted (hardcopy and electronic) if you withdraw any time before, during or right after the second session of the study, before you leave the lab. Please let us know if you would like to be contacted for future studies or if you no longer wish to be contacted at all. Once the data is collected and the study complete (after you have left your second session), data will be anonymized and can no longer be deleted.

**Possible Benefits:**

Your participation in this study will offer you the possibility to gain some explicit insight into your perception of serial music. Furthermore, this research is a valuable addition to the literature on the neglected topic of the perception of non-tonal music.

**Possible Risks:**

The risks associated with participating in this study are extremely low. If you ever feel claustrophobic in the sound booth or need a break, let one of the experimenters know; breaks are also built in to the study for comfort.

Your anonymized data will be publicly available. These data will not include identifiable information such as your age and gender; only your responses to the questionnaires about your musical background and exposure to serial music and your ratings. This leaves a near zero risk of being identified from your data.

Note that this study is not a course requirement and Dr. Argentino will not know who does or does not participate in the study. Decision to participate or withdraw will have no bearing on your grade or any aspect of your student status.

**Confidentiality:**

Once all data is collected, your data will be stored with only your participant code as an identifier. A document linking your personal information (name only) to your participant code will be used to ensure we pair the correct sessions. This linking information will be deleted after the second study session; before this, it is necessary to link your data. Your participation in this study is confidential and we will not identify any participants who have taken part in this study to anyone outside this testing room. This includes Dr. Argentino, who is on the research team, but will only have access to fully anonymized data.

**Anonymity:**

Every reasonable effort will be made to ensure your anonymity. You will not be identified in publications and your data will be kept anonymously.

**Use, Access, Ownership, and Storage of Data:**

Your hardcopy data will be kept in a storage cabinet in a locked office while your electronic data will be kept on a password-protected computer and a lab Sync account. All researchers involved in this project may access your anonymized data, including Dr. Sauvé, head of lab Dr. Zendel and undergraduate student assistants working in the lab. Anonymized data will also be uploaded to the Open Science Framework (OSF) in line with open science practices. Data will be kept for a minimum of five years, as required by Memorial University’s policy on Integrity in Scholarly Research. Electronic data will be kept indefinitely through OSF and hardcopy data will be destroyed after five years.

**Third-Party Data Collection and/or Storage:**

Data collected from you as part of your participation in this project will be hosted and/or stored electronically on a Sync account accessible only to CAANLab members and is subject to their privacy policy, and to any relevant laws of the country in which their servers are located. Therefore, anonymity and confidentiality of data may not be guaranteed in the rare instance, for example, that government agencies obtain a court order compelling the provider to grant access to specific data stored on their servers. If you have questions or concerns about how your data will be collected or stored, please contact the researcher and/or visit the provider’s website for more information before participating. Anonymized data will also be hosted on the OSF website under a Creative Commons Universal License (CC0 1.0 Universal). The privacy and security policy of the third-party hosting data collection and/or storing data can be found at: <https://www.sync.com/privacy>.

**Reporting of Results:**

The study will be reported in a peer-reviewed journal. Data will always be presented in summarized form and you will never be identified. You may find details of the article when it is published at <http://caanlab.grenfell.mun.ca/Pages/Publications.aspx>.

**Questions:**

You are welcome to ask questions before, during, or after your participation in this research. If you would like more information about this study, please contact: *Sarah Sauvé at sarah.sauve@mun.ca.*

The proposal for this research has been reviewed by the Interdisciplinary Committee on Ethics in Human Research and found to be in compliance with Memorial University’s ethics policy. If you have ethical concerns about the research, such as the way you have been treated or your rights as a participant, you may contact the Chairperson of the ICEHR at [icehr@mun.ca](mailto:icehr@mun.ca) or by telephone at 709-864-2861.

**Consent:**

Your signature on this form means that:

* You have read the information about the research.
* You have been able to ask questions about this study.
* You are satisfied with the answers to all your questions.
* You understand what the study is about and what you will be doing.
* You understand that your **anonymized** data will be **publicly** available, in line with open science research practices.
* You understand that you are free to withdraw participation in the study without having to give a reason, and that doing so will not affect you now or in the future.
* You understand that if you choose to end participation **during** data collection, any data collected from you up to that **point will be destroyed**.
* You understand that if you choose to withdraw **after** you have left the second session, your data cannot be removed from the study.

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| --- | --- |
| I allow data collected from me to be published anonymously in a peer-reviewed journal | Yes  No |

By signing this form, you do not give up your legal rights and do not release the researchers from their professional responsibilities.

**Your Signature Confirms:**

I have read what this study is about and understood the risks and benefits. I have had adequate time to think about this and had the opportunity to ask questions and my questions have been answered.

I agree to participate in the research project understanding the risks and contributions of my participation, that my participation is voluntary, and that I may end my participation.

A copy of this Informed Consent Form has been given to me for my records.

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Signature of Participant Date

**Researcher’s Signature:**

I have explained this study to the best of my ability. I invited questions and gave answers. I believe that the participant fully understands what is involved in being in the study, any potential risks of the study and that he or she has freely chosen to be in the study.

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Signature of Principal Investigator Date