

Participant information sheet

Free University of Bozen-Bolzano

Researcher Team: Prof. Angelika Peer, Full Professor
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Study Title: *Neural Music Information Retrieval*

1. WHAT IS THIS DOCUMENT?

This document serves as a consent form. It will explain to you about this study so that you can make an informed decision about your participation in this research. We encourage you to take some time to read this document and ask questions. If you decide to participate, you will be asked to sign it by acknowledging that you have read it and understood it. You will be given a copy of this document for your records.

2. WHAT IS THIS RESEARCH ABOUT?

This research project aims to investigate how the brain processes music by analyzing brain activity using Electroencephalography (EEG). During the experiment, you will be asked to listen to via headphones and imagine short music segments while we record your brain activity. Our goal is to record a dataset, which allows to train a decoding model, via Artificial Intelligence, that can reconstruct the sound you were listening to or imagining using your brain signals. We will also evaluate your Music Expertise level via a questionnaire and Music Imagery Ability via a computer application as they will be relevant factors for your brain response.

This study could improve the design of future Brain-Computer Interfaces and allow non-musically trained people to still compose music. It could also be crucial for people that suffer from locked-in syndrome or have lost the ability to move to still have the possibility to artistically express themselves. Your participation will contribute to advancing our understanding of the human brain's response to music and its potential applications in various fields.

3. WHO CAN PARTICIPATE IN THIS RESEARCH STUDY?

Anyone above the age of 18 with normal hearing and no previously reported neurologic disorders.

4. WHERE WILL THIS RESEARCH STUDY TAKE PLACE AND HOW MANY PEOPLE WILL PARTICIPATE?

This study will be conducted at NOI Techpark in Bolzano. We expect around 40 subjects.

5. WHAT WILL I BE ASKED TO DO AND HOW MUCH TIME WILL IT TAKE?

After you have completed the online questionnaire, if you fulfill the inclusion criteria, you will be asked to insert your contact details in an online form. Based on this information, we will contact you to agree on an experimental slot in the premises of our lab at NOI Techpark. Once arrived, we will ask you to fill a questionnaire to evaluate your Musical Expertise level. Afterwards we will conduct a computer-supported test to evaluate your Musical Imagery ability. Finally, we will place an EEG cap (Fig.1) on your head, apply some gel and start recording your brain signals while you are listening to via headphones and imagining short melody segments.

We estimate that the questionnaires will take at most half an hour to complete and the recording will be less than an hour and half.

Please note that you can withdraw from the experiment at any time.



Fig. 1: EEG cap used for the experiment.

6. WILL BEING IN THIS RESEARCH STUDY HELP ME IN ANY WAY?

The study aims at decoding the music you were listening to or imagining. Results and data collected in this study could improve the design of future Brain-Computer Interfaces. Your participation in this study contributes to the advancement of knowledge in the field of Neurophysiology and Electroencephalography Information Retrieval.

7. WHAT ARE MY RISKS OF BEING IN THIS RESEARCH STUDY?

There is no health risk concerning the experiment. Before the experiment you will be able to adjust the audio of the produced sound at your most comfortable level. You will be able to interrupt the experiment at any time.

Regarding personal data, all the captured data will be anonymized, and therefore, there will be no links between your identity and the data published in the final datasets. Furthermore, if you don't want to continue participating you can communicate with the research team and your data will be deleted (please note that this needs to be communicated before data is anonymized).

8. HOW WILL MY PERSONAL INFORMATION BE PROTECTED?

The privacy of your personal data is of utmost importance to us. We ask for personal data only when volunteers meet our inclusion criteria. If volunteers do not meet our inclusion criteria their responses to our questionnaire are deleted. Thus, access to any sensitive data is reduced to a minimum at the pre-screening stage. If you meet our inclusion criteria and participate in the experiment, your data will be anonymized immediately at the end of the experimental session. All links between your identity and the collected data will be destroyed. Please also note that we aim to publish the anonymized data in a public repository. Since the data has been anonymized, there will be no possibility to connect the data in these public datasets to you. The signed consent documents will be stored securely following university rules.

9. WILL I BE GIVEN ANY MONEY OR OTHER COMPENSATION FOR BEING IN THIS RESEARCH STUDY?

You will not receive any monetary compensation for being part of this research study. However, we highly appreciate your enthusiasm and eagerness to advance scientific knowledge. To express our gratitude for your participation, you will be handed out a letter of appreciation from the Human-centered Technologies and Machine Intelligence Lab, University of Bozen-Bolzano, Italy.

10. WHO CAN I TALK TO IF I HAVE QUESTIONS?

You are welcome to ask questions before and also after the experiment by contacting the research team members. Giorgio Frego (e-mail: gfrego@unibz.it; phone number: +39 3400568591) or Prof. Angelika Peer (e-mail: angelika.peer@unibz.it; phone number: +39 0471 017766).

11. WHAT HAPPENS IF I SAY YES, BUT I CHANGE MY MIND LATER?

If during the experiment you decide that you no longer wish to participate in this study, you can contact the research team and your data will be withdrawn. Nonetheless, your data cannot be withdrawn once the data has been anonymized as all direct identifiers from your data will be destroyed after the end of the session.

Thank you for reading this and considering taking part in this study. Do not hesitate to contact the researchers mentioned under point 10 for further information or clarification about this study.