# The Effects of Music and Auditory Beat Stimulation on Anxiety
# Informed Consent Form

Approved by the Ryerson Ethics Board: REB 2020-068 on March 26th, 2020, renewal approval: March 18th, 2021

NCT#:

Date: 2021-11-26

**Ryerson University Consent Agreement**

You are being invited to participate in a research study. Please read this consent form so that you understand what your participation will involve. Before you consent to participate, please feel free to email any questions you have to the co-investigators (Dr. Adiel Mallik, Zoe Thomson) to be sure you understand what your participation will involve. The co-investigators (Dr. Adiel Mallik, Zoe Thomson) and/or the research assistant will be facilitating the consent process.

TITLE OF THE STUDY: The effect of an affective music recommendation system and auditory beat stimulation on anxiety.

INVESTIGATORS This research study is being conducted by Dr. Frank Russo, Dr. Adiel Mallik, and Zoë Thomson, from the Department of Psychology at Ryerson University.

This study is funded by Mitacs and LUCID, Inc.

The results of this study may contribute to technical improvements and/or marketing of LUCID's software. It should also be noted that Dr. Frank Russo, the PI of this study, has been issued a small amount of share options in LUCID, the creator of the affect-based music selection algorithm being tested in this research. However, being that this research is exploratory and will influence further technological development of the algorithm, this represents a perceived and not a real conflict of interest. In the case that preliminary results of this study do not indicate that LUCID's technology produces significant anxiety reduction in the student population, a contingency plan will be acted upon to adjust specific parameters of the technology based on the findings of the study. Results of the study will still be published, maintaining the integrity of the researchers and the institution and producing limited harm to the company. Furthermore, the Department of Psychology's Associate Dean of Research will be the signatory on all funds.

If you have any questions or concerns about the research, please feel free to contact:
**Zoë Thomson**
Email: zthomson@ryerson.ca
**Dr. Adiel Mallik**
Email: adiel.mallik@ryerson.ca

PURPOSE OF THE STUDY
This study is designed to assess the effectiveness of a mood-based personalized music recommendation system and auditory beat stimulation. 300 people who self-identify as having no hearing impairments, cardiac issues, or history of seizures/epilepsy will be recruited. Results of the study will be published in peer-reviewed journals and presented at conferences.

WHAT PARTICIPATION MEANS

If you volunteer to participate this study, you will be asked to do the following things:

- If you meet the above eligibility criteria and decide to participate in this study. After reading through and agreeing to this consent form. You will be provided instructions on how to download and install the LUCID Research App on your iOS13 device (iPhone, iPad, iPod touch) and randomly assigned to one of the following four experimental treatments:
    1) Listening to 24 minutes of LUCID's personalized music plus auditory beat stimulation.
    2) Listening to 24 minutes of LUCID's personalized music without auditory beat stimulation.
    3) Listening to 24 minutes of auditory beat stimulation without music.
    4) Listening to 24 minutes of pink noise.
- The study will take a total of 60 minutes and will proceed as follows:
    1) You will complete a few questionnaires about your music taste, your musical training, your mood, your personality, your demographic (gender and age) and your stress and anxiety levels.
    2) You will then listen to one of the four experimental treatments described above for 24 minutes.
    3) You will then complete a few questionnaires about your stress and anxiety levels and your mood.

**Above all else, you have the right to withdraw from this study at any time, including in the middle of a session, for any reason. Your participation in this study is completely voluntary at every point and you will not be penalized in any way if you choose to withdraw. To withdraw from the study at any time, you can simply exit your web browser or exit the LUCID Research App at any time. Any data you have entered up to that point will be deleted.**

POTENTIAL BENEFITS

During your experimental session you may receive the combination of LUCID's mood-based music recommendation system and auditory beat stimulation. If this intervention is effective at reducing anxiety for you, then you may receive some mental benefit. This app is also available for free upon request; in the case that it is effective for you, you will be able to access it as a tool to manage your anxiety symptoms.

Furthermore, the results of this study will contribute to the literature around noninvasive music-based therapeutics for anxiety symptoms as well as technical improvements of the product.

It cannot be guaranteed, however, that you will receive any benefits from participating in this study.

WHAT ARE THE POTENTIAL RISKS TO YOU AS A PARTICIPANT

It is unlikely that you will feel elevated levels of anxiety as the activities you are performing during this study (listening to music and answering questionnaires) are not that different from what you experience on a day to day basis. In the event that you do have elevated levels of anxiety from the study, we would like to remind you that you are free to withdraw from this study at any time without penalty by exiting the LUCID Research App or exiting your web browser.

There is also the risk of breach of data security. In the case that the data from the study were obtained by a third party outside the research team, your Prolific ID could be linked with your questionnaire responses. Prolific by default keeps the identification of participants private through the use of an anonymous ID. After the consent process, should you contact the co-investigators of this study (Dr. Adiel Mallik and Zoe Thomson) for any reason, we will delete your email address upon the cessation of our correspondence. Even in this situation we will have no record linking your Prolific ID to your email address and name.

In the case that you know the PI or any other members of the research team, you will not be penalized for any decisions you make regarding your participation in and/or withdrawal from the study.

CONFIDENTIALITY AND DATA STORAGE

This study uses the Qualtrics platform to collect questionnaire data, which is a United States of American (USA) company. Consequently, Qualtrics or USA authorities may access survey data in some forms (e.g., aggregate usage information) and under strict policies. Qualtrics employs a variety of security features to make sure that the data collected are not accessible by outside bodies. More information on Qualtrics' security systems can be viewed here: https://www.qualtrics.com/security-statement/. Information regarding their protective privacy policy is available here: https://www.qualtrics.com/privacy-statement/. Although Qualtrics usually stores IP address data, we have deactivated that function for this study. After data collection, digitized questionnaire data will be stored on Psychology Department servers, in folders that are only accessible to the researchers. This data will be identifiable by non-identifying participant Prolific IDs, not by name. Data will be kept for a period of 7 years to allow sufficient time for analysis, as well as the potential re-analysis pending requests from other researchers post-

publication. At this time, paper data will be shredded, and electronic data will be deleted. Published data will contain exclusively information about the whole population and no individual data.

In the case that you wish to withdraw your data from the analysis after completing the study, you may do so up to and including 14 days after completion by contacting the co-investigators of this study (Dr. Adiel Mallik, Zoe Thomson). In this case you will have to provide the co-investigators with your Prolific ID. The co-investigators will then withdraw your data from the study and delete your contact information upon cessation of correspondence to ensure that no record exists of your name being matched to your Prolific ID.

If you complete the study, your anonymized data will be kept for 7 years and then will be shredded or deleted. Your name and email information will be deleted and/or shredded, so all biometric and questionnaire data will be untraceable to you. The anonymized data collected in this study will be used at Ryerson for research purposes and may be used by the commercial partner in this study for further internal research. Your data will not be sold to third parties, and your data will not be transported outside of SMART Lab.

INCENTIVES FOR PARTICIPATION

You will be compensated with £7.50 upon successful completion of all study activities which consists of agreeing to the terms of this consent form, successful download and installation of the LUCID Research Application on your iOS13 device, completion of the before treatment questionnaire, listening to the assigned 24 minute experimental treatment and completion of the after treatment questionnaire.

COSTS OF PARTICIPATION

This study is conducted online, therefore participants will not have any associated costs of transportation to or from the lab.

COMPENSATION FOR INJURY

By agreeing to participate in this research, you are not giving up or waiving any legal right in the event that you are harmed during the research.

VOLUNTARY PARTICIPATION AND WITHDRAWAL

Participation in this study is completely voluntary. You can choose whether to be in this study or not. You may stop participating at any time. If you choose to stop participating, you may also

choose to not have your data included in the study as described above. Your choice of whether or not to participate will not influence your future relations with Ryerson University, LUCID, or the investigators (Dr. Frank Russo, Dr. Adiel Mallik, Zoë Thomson) involved in the research.

QUESTIONS ABOUT THE STUDY If you have any questions about the research now, please ask the RA or co-investigators (Dr. Adiel Mallik, Zoe Thomson). If you have questions later about the research, you may contact:

**Zoë Thomson – zthomson@ryerson.ca**
**Dr. Adiel Mallik – adiel.mallik@ryerson.ca**

This study has been reviewed by the Ryerson University Research Ethics Board (File No: REB 2020-068). If you have questions regarding your rights as a participant in this study, please contact:

Research Ethics Board
c/o Office of the Vice President, Research and Innovation
Ryerson University
350 Victoria Street
Toronto, ON M5B 2K3
416-979-5042
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The effect of an affective music recommendation system and auditory beat stimulation on anxiety in the student population.

CONFIRMATION OF AGREEMENT

By clicking the "I consent" button you indicate that you have read the information in this agreement and have had a chance to ask any questions you have about the study. By clicking the "I consent" button you also indicate that you agree to participate in the study and have been told that you can change your mind and withdraw your consent to participate at any time. You have been given a copy of this agreement. You have been told that by clicking the "I consent" button on this agreement you are not giving up any of your legal rights.