

CONSENT FORM

“Neural Coding of Speech Sounds”

You are invited to participate in a research study of “*Neural Coding of Speech Sounds.*” You were selected as a possible participant because you are a native speaker of English and do not have a medical history of speech, language, or hearing disorders. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Yang Zhang, Ph.D., an Assistant Professor in the Department of Speech-Language-Hearing Sciences at The University of Minnesota, Minneapolis. Other people involved in this study are Sharon Miller, a PhD student at The University of Minnesota, and research assistants at The University of Minnesota. It is funded by The College of Liberal Arts, Graduate Research Partnership Program Fellowship, the Grant-in-Aid of Research, Artistry and Scholarship Program (GIA) and the set-up account of the PI’s lab.

Study Purpose

The purpose of the study is to examine how the brain processes speech sounds (for example, sounds such as "s" & "sh") with and without a hearing aid. A hearing aid amplifies certain sounds (e.g. soft sounds like “th”), and we will look at how the brain responds to speech that has been processed by a hearing aid. We will take both behavioral and brain measures from you when you are listening to computer generated speech both with and without a hearing aid in one ear. We hope that the results of this study will help us better understand how the adult brain processes speech sounds when a person is wearing a hearing aid. The knowledge we gain from the study will provide information about the brain mechanisms for processing speech that has been amplified by the hearing aid. Although the results of the test will be of no direct benefit to you, they may provide information that will be helpful to persons that have hearing loss and wear hearing aids.

Study Procedures

If you agree to participate in this study, we would ask you to do the following:

1. In the behavioral experiment, you will be asked to listen to sounds presented from a speaker and respond by pressing a button. Your responses will be automatically recorded by the computer. There are two different behavioral tasks for you to complete. 1) Identification task: you will hear a speech sound (e.g. “b”) and you will be asked to identify the sound you heard. 2) Discrimination task: you will hear two speech sounds (e.g. “b” and “d”) and be asked if the two sounds you heard were the same or different. The tasks will be completed with and without a hearing aid present in one ear. You will be given some practice trials to familiarize you with the procedure. The testing session will start immediately after the practice session and will take about one hour to complete. You will be given short breaks of about 2-3 minutes, or longer, if you would like.
2. In the brain measure experiment, you will be asked to sit in a comfortable chair and watch a silent movie on a computer screen in front of you. We will measure the activity in your brain while stimuli are being presented from a speaker. To measure your brain activity, we

will put a soft cap on your head. The cap fits like a shower cap and is made of soft stretchy material with electrodes sewn into it. The electrodes function like microphones and pick up brain activity from your scalp. The electrodes have holes in the center of them, and to get a clear signal from your scalp, we will squirt gel into each of the holes using a flat-tipped syringe. The gel contains just water and salt, and the syringe is not the type used to give shots and will not break the skin. The gel washes easily out of your hair. The set-up will take us about 15 minutes. We will then start recording your brain activity while the sounds are being presented through the speaker. During the recording, your task is to watch the video and ignore the sounds, unless otherwise instructed. In some sessions, you may be asked to press a button when you hear a sound change (for example, when you hear a “p” instead of a “b”). During the recording you will be asked to sit as still as possible and to relax your face and muscles as much as possible. You will be given multiple short breaks of about 2-3 minutes, or longer, if needed. The experiment will take about one hour to complete. If you normally wear contact lenses, we suggest you wear glasses to minimize excessive blinking which can interfere with testing. After testing, your hair will be messy, so a hair wash station with sanitized combs is available for you to use after the experiment is finished.

Throughout the experiment we will be watching you from a monitor in another room. If you get tired, we will stop and take a short break. You can stop the session at any time for any reason by simply telling the experimenter you would like to stop.

Risks of Study Participation

The study has no known risks.

Benefits of Study Participation

There is no direct benefit to participants. Although the results of the tests will not directly benefit you, they may yield information that will help persons who use hearing aids understand speech more clearly.

Alternatives to Study Participation

This study does not involve any course of treatment to you.

Study Costs/Compensation

You will be compensated \$20.00 for participating in the study. If you are unable or unwilling to complete the study, you will be compensated at a pro-rated rate of \$5.00 per hour of participation.

Confidentiality

The records of this study will be kept private. In any publications or presentations, we will not include any information that will make it possible to identify you as a subject. Your record for the study may, however, be reviewed by departments at the University of Minnesota with appropriate regulatory oversight. No study information will be recorded in your medical record. To these extents, confidentiality is not absolute.

Research Related Injury

In the event that this research activity results in an injury, treatment will be available, including first aid, emergency treatment and follow-up care as needed. Care for such injuries will be billed in the ordinary manner, to you or your insurance company. If you think that you have suffered a research related injury let the study physicians know right away.

Voluntary Nature of the Study

Participation in this study is voluntary. Your decision whether or not to participate in this study will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to withdraw at any time without affecting those relationships.

Contacts and Questions

The researchers conducting this study are Yang Zhang, PhD and Sharon Miller, a student in the PhD program at The University of Minnesota. Yang Zhang's research assistants may also be present. You may ask any questions you have now, or if you have questions later, **you are encouraged to** contact them at 49 Shevlin Hall, (612) 624-7818, zhang470@umn.edu.

If you have any questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; 612-625-1650.

You will be given a copy of this form to keep for your records.

Statement of Consent

I have read the above information. I have asked questions and have received answers. I consent to participate in the study.

Signature of Subject _____

Date _____

Signature of Investigator _____

Date _____