Effects of experience on recognition of speech produced with a face mask (#68636)

Author(s)

Anne Crinnion (University of Connecticut) - anne.crinnion@uconn.edu

Joseph Toscano (Villanova University) - joseph.toscano@villanova.edu

Cheyenne Toscano (Villanova University) - cheyenne.toscano@villanova.edu

1) Have any data been collected for this study already?

No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?

How do different types of face masks affect speech recognition, and how has this changed over the course of the COVID-19 pandemic? This study is a replication and follow-up to Toscano and Toscano (2021).

3) Describe the key dependent variable(s) specifying how they will be measured.

The key dependent variable is the proportion of words correctly recognized for sentences in background noise. This will be measured by asking listeners to type the sentence they hear on each trial.

4) How many and which conditions will participants be assigned to?

The experiment is a 2 (signal-to-noise ratio) x 2 (talker gender) x 5 (mask type) within-subjects design. Stimuli consist of recordings of 20 sentences in multi-talker babble noise, distributed among the 20 the experimental conditions for each subject.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Data will be analyzed using logistic mixed-effects models, with each of the experimental conditions entered as a fixed effect and subject entered as a random effect. The random effects structure will be chosen based on the maximal model justified by the data using a backward-stepping model comparison procedure. A second analysis will include the data from Toscano and Toscano (2021), in order to examine changes in effects over the course of the pandemic. The entire set of data will be analyzed using a logistic mixed-effects model with the same within-subject factors, as well as experiment (the original experiment or the current experiment) as a between-subject factor.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.

Subjects will be excluded from analysis if they meet any of the following criteria: (1) failure to correctly recognize at least half of the words in practice sentences presented in quiet before the main experiment, (2) failure to enter a valid response on at least half of the experimental trials (e.g., leaving the response box blank or entering nonsense characters), or (3) having self-reported non-normal hearing. Individual trials will be excluded from analysis if the subject takes longer than 60 seconds to respond.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We will run 200 subjects in the experiment. Each subject will be presented with 20 trials, for a total of 4,000 trials across all subjects.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)

As a follow-up analysis, we will analyze whether the effects vary depending on how often the listener communicated with others using face masks during the pandemic.