AUDL 4007 & GS12: Auditory Perception: Laboratory session

Aspects of informational masking for speech-in-noise perception

Introduction

Many factors are important in determining the extent to which background speech interferes with the perception of a particular target talker. In this laboratory session, you will be performing a speech-in-noise task with masker speech that varies in the degree of similarity to the target speech, and its intelligibility. As you will see, the semantic content of the masking speech is usually very similar to that of the target.

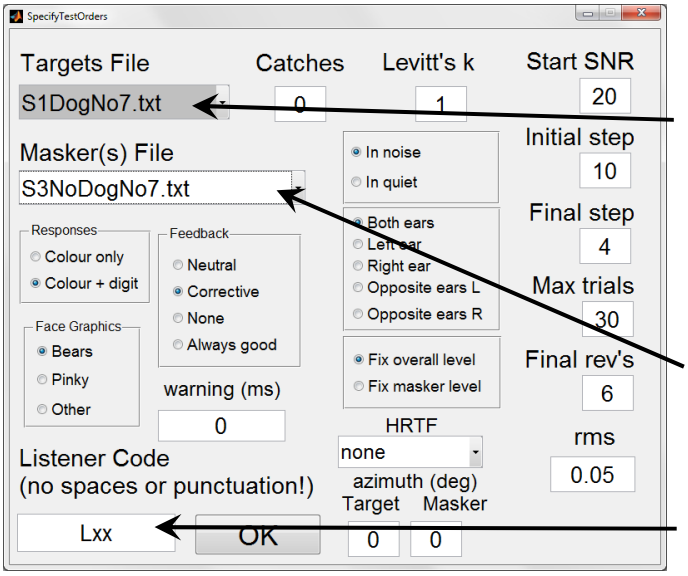
Materials

You will use software that adaptively measures the *Speech Reception Threshold* (SRT), which is the *signal-to-noise ratio* (SNR) that allows a certain level of performance (here 50%) on a closed-set speech identification task. Better performance is indicated by *lower* numbers, because lower numbers mean more noise and less speech can be tolerated.

On every trial, you will hear a sentence of the type 'Show the dog where the [colour] [digit] is' where 6 colours and 8 digits are possible (e.g., *Show the dog where the red 6 is*). You will then click on one of 48 response boxes. The SNR will be adjusted on the basis of your performance. Feedback will be given in the form of a smiley or sad face. The target signals are always the same, spoken by an adult female, but there are 4 different masking conditions. In 3 of those conditions, the talkers are saying a similar sentence (e.g., *Show the pig where the blue 2 is*). You try to ignore the other talker. The 3 talkers vary in the degree of similarity to the target talker. The 4th condition is very different in having the speech of the target talker as a masker, but with the sentences reversed in time so that they are no longer intelligible.

Method

First, determine a random order of the 4 conditions and write them into the table overleaf. You will then run yourself in the first condition as a practice run, before running the 4 conditions in order. To run the program, click on the ***btemp*** icon on the desktop, and then navigate to ***/btemp/stuart/CCRM AUDL 4007 & GS12***.



When you start the program (by clicking on ***CCRM.exe***), you will see a GUI like the one at left. The targets will always be **S1DogNo7.txt**. You must pick the masker from the drop-down menu just below that:

- **S4NoDogNo7.txt** – a male talker
- **S3NoDogNo7.txt** – a different female talker from the targets
- **S1NoDogNo7.txt**– the same female talker as the targets
- **S1RevNoDogNo7.txt**– the target female talker whose speech has been reversed in time

Also make sure to enter your initials for the Listener Code. Change no other value!

Run yourself through the 4 conditions. There is no point in trying to think too hard about the response when you are not sure. Go with your initial impulse.

Observations

Your results files can be found under 'Documents\AUDL4007Results'. There are two files generated for each test, both of them being .csv files which can be opened in Excel. One of them has the trial-by-trial record of the test (similar to the files you analysed from SHaPS, when you measured frequency selectivity), and the other some summary values. You probably only need to look at the summary files (indicated by '_sum' in the name). The file names indicate which masker was used, and the time of the test, for example:

Lxx_GUI_S1RevNoDogNo7_08-Mar-2012_09-21-56_sum.csv

Don't use the result of your first (practice) run. The crucial outcome parameter is labelled *uRevs*, which is the mean level of the final reversals in the adaptive track (once the final step size has been reached).

masker	SRT

Things to think about

Which of the three intelligible masking conditions led to the best performance and which the worst? What aspects of the masking signals govern the degree of similarity between the maskers and the target? Did reversing the target talker make it more or less effective as a masker? Why might this be, from the point of view of informational masking? Would you expect any differences in energetic masking between the forward and time-reversed speech? What acoustic aspects of these are similar and what are different?