Statistics | Winter Semester 2022-2023
Dr Massimiliano Canzi & **Ilaria Venagli** (TA)

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Final Assignment

Due: 10.04.23, **23:59** Konstanz Time
Late Submission Penalty: 1 step mark every 24h after that, e.g. 1.7 instead of 1.3 if you submit on 11.4, 2.0 instead of 1.3 if you submit on 12.04, and so on.
Word Count: ~2500 words (R code and references excluded)

Choose ONE of the three tracks provided below. Write a scientific, experimental paper summarizing the chosen experiment. Write it as you would write your own original research. Include an Introduction / Literature Review section, a Methods section, a Results section and, finally, a Discussion section. Use R to curate, analyze and visualize the data. Provide R code and output in your final submission. All the details regarding the methods of the experiment i.e. the procedure, the platform used will be provided to you. Other information such as stimuli, participant demographic information, etc. can be extracted from the data. **You are NOT allowed to work in groups for any portion of this assignment. Do not include your name on the final submission** (only include your student ID). Only submit 1 (one) file (html or pdf) that includes text, plots, code and output.

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The current study aims at quantifying the effects of wearing a face mask on speech perception, by investigating performance of listeners in a phoneme monitoring task with monosyllabic words containing voiceless fricatives. In this experiment, we explore the interplay of acoustic filtering with other potentially relevant factors such as the presence of visual cues, lexical frequency and listener-specific background. We test hypotheses that suggest the impact of face coverings (esp. FFP2 face mask) on speech perception is not directly moderated by the acoustic properties of masked speech. Rather, it is inked to an interplay of audiovisual integration, the absence of visual cues for (some) target fricatives, and the listener-specific sociolinguistic background. We believe that acoustic degradation (due to filtering) along with the absence of visual cues may be jointly contributing to the lower level of intelligibility in masked speech.

(1) The phonological system of modern Korean is very different than that of English. In addition to effects of acoustic filtering and absence of visual cues, what are the effects of Korean L1-transfer on the perception of (masked-)speech in English? Focus on phoneme monitoring accuracy.
(2) The phonological system of modern Greek is very different than that of English. In addition to effects of acoustic filtering and absence of visual cues, what are the effects of Greek L1-transfer on the perception of (masked-)speech in English? Focus on phoneme monitoring accuracy.
(3) Some varieties of English (e.g. England, Scotland) are heavily characterized by th-fronting, a merger of /f/ and /θ/. In varieties with th-fronting *three* and *free* are homophones. In addition to effects of acoustic filtering and absence of visual cues, what are the effects of th-fronting on the perception of (masked-)speech in English? Focus on both phoneme monitoring accuracy and reaction times of correct answers.

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Data: Track (1) requires ENG and KOR data. Track (2) requires ENG and GRE data. The final track only requires ENG data. All tracks require log-frequency data from the SUBTLEX-UK corpus.
Methods: All experimental items were recorded audiovisually in two experimental conditions (mask, no mask) by one native speaker of Southern British English. For the masked speech condition, the speaker was wearing a FFP2 mask that was commonly used in Germany at the time of the recording. The mask prevents listeners from ob erving any lip movements of the speaker. The experiment took place online, hosted on Gorilla. The participants were instructed to attempt the experiment in a quiet room using only wired or built-in mouse and keyboard, headphones or speakers. All stimuli were presented audiovisually and twice (once in the no mask condition, once in the mask condition). The participants' task was to monitor the stimuli for the occurrence of one of the four fricatives. After each audiovisual prompt, the experimental screen prompted participants to state as quickly as possible which of the four target phonemes they just heard, by clicking on one of the buttons shown on the screen. Participants were instructed to click on the X button in the centre of the screen if they did not perceive any of the four fricatives in the word they just heard. Following the phoneme monitoring task, the participants had to fill in a questionnaire that included general biographic questions as well as their experience with wearing a face mask in public.

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FAQ:

Do I have to include ALL code? No, include your code for the models. Code for data manipulation can be summarized in a "data treatment" section of the methods.
How many references do I need? As many as it takes to drive your point home.
If R / a package / a function doesn't work, can I ask my friend? Yes. You are working on this assignment by yourself and all code and text should be original. However, it's perfectly ok to figure out small R problems / function errors together with your class mates. Best place to ask is on Discord.
Do I send the assignment via e-mail? No, a link on Ilias will be provided ahead of the deadline.
Can I show you my progress before I write up the analysis? No, but I will host a session in between the two terms – probably online – where questions about the analysis can be asked by all attending students.