

The term *auditory masking* is typically used to depict the deficit in sound perception, and it is defined as “the process by which the threshold of hearing one sound is raised by the presence of another” (Wang & Xu, 2021: 110). The listener’s ability to perceive and comprehend incoming speech clearly and accurately relies on “the capacity of the auditory system to process complex sounds in the presence of background noise” (Smiljanić & Sladen, 2013: 1086).

The study investigated the effects of background noise, one of the major environmental stressors, on speech comprehension. For the purpose of this study, any sound signal arriving at the listener concurrently with the speech target was considered a noise source. Just like any other sound, noise is “the result of vibration within any physical medium” (Szalma & Hancock, 2011: 682). In addition, noise can be perceived as “all external acoustic energy,” in which sense all speech should also be considered to be “meaningful or variable noise” (Koelega & Brinkman, 1986: 466).

In order to find out to what extent different types of background noise maskers affect speech comprehension, a listening comprehension task was conducted. Three different groups of noise maskers (6 maskers) were added to the stimuli used in the experiment – energetic and informational maskers, as well as degraded speech. Six maskers were used as sources of background noise, while the control condition (clean) contained no noise: (1) single babble masker in English, (2) single babble masker in Mandarin, (3) multi babble masker in Greek and (4) construction site noise, (5) narrow-band speech signal emulating phone effect and (6) reverberated speech signal. The first four maskers were prerecorded and mixed with speech signal, while the latter two were achieved by manipulating the original speech signal.

Fifty undergraduate students from McMaster University participated in the study for class credit. The experiments were conducted online via the Zoom platform.

Listening comprehension is typically seen as a three-stage process; the first stage being the *perception* stage, during which the listener encodes the received message; the second being the *parsing* stage, during which “the words in the message are transformed into a mental representation of the combined meaning of the words,” and, finally, the *utilization* stage, during which listeners “use the mental representation of the sentence’s meaning” (Anderson, 2009: 358). The listening comprehension task assesses one’s ability to understand material presented in auditory mode, and it can be tested indirectly through reading and writing, but also directly – typically answering multiple-choice questions after auditorily presented material. In the present experiment, the latter modality was used.

The study found that sound degradation was more detrimental to speech comprehension than the other two types of maskers. Importantly, the results found no clear-cut divisions between the masker groups, for not all maskers belonging to one group affected performance equally.

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