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Iwarsson, J.

journal: TMH-QPSR
volume: 41
number: 4
year: 2000
pages: 007-018

http://www.speech.kth.se/qpsr
Perceptual detection of inhalations in reading

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Patients with vocal nodules seem to produce speech at lower lung volumes and inhale at syntactically deviant positions, as compared to normal subjects. Information about respiratory patterns during speech is thus of great value for the voice clinician. Such information can both add to the understanding of the patient’s voice problems and help the clinician to design an adequate treatment. The purpose of the present study was to investigate the accuracy with which inhalations can be detected from audio recordings of reading. Six females with bilateral vocal nodules and six healthy females were recorded while reading a standard text. Inhalations were identified from the relative lung volume signal, recorded by respiratory inductive plethysmography. A listening panel of 31 students in speech pathology were asked to mark in a written text where they thought the readers inhaled; not only audible inhalations but also pauses implying an inhalation.

The syntactical distribution of inhalations showed that inhalations most often occurred at the initiation of a clause, for both subject groups. Only few inhalations were regarded as deviant from a linguistic point of view. These inhalations were missed by a high percentage of the listening panel. The overall ability to perceptually detect inhalations was fairly good but varied considerably between the listeners. On average 91.3% of the inhalations were correctly marked. The ability to perceptually detect inhalations was shown to be correlated to various factors, e.g. the syntactic location, the inhalation frequency, the inhalatory volume change, and to some extent the sound levels of the inhalations.

It was concluded that perceptual detection of inhalations seems to offer a simple method to obtain information about inhalatory behaviour in voice patients. In order to include this method in clinical routinely measurements of voice disorders, further research seems necessary.

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