SPEAKERS' COMFORT AND VOICE USE IN DIFFERENT ENVIRONMENTS AND BABBLE-NOISE. ARE THERE EFFECTS ON EFFORT AND COGNITION?

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Speakers have been shown to be able to predict the speaker-comfort of an environment. There are indications that teachers with voice problems make use of the room-acoustics differently than their voice-healthy controls. The aim of this study was to investigate what vocal changes healthy speakers and speakers with voice disorders do in different acoustical environments and noise conditions, and how they perceive the vocal effort. A further aim was to investigate listeners' voice perception and their ratings of the listening effort. Nine female speakers, voice patients and voice-healthy controls were exposed to four controlled, acoustical "environments" mounted in the same room: 1. stripped; 2. wall- and ceiling mounted absorbents; 3-4 as 2 but with extra ceiling absorbents and in two positions. The speakers were equipped with a voice-accumulator and simultaneous voice recordings were performed during 3-5 minutes of free speech and a structured task: description of a fictive map. The speakers were recorded in three noise conditions in each setting: silence (28dBA), classroom noise (60 dBA); day-care noise (75 dBA). A panel of listeners were sitting at fixed positions in a class-room set-up. Both listeners and speakers rated effort on VA-scales. The recordings were later analyzed by an expert panel. There was a co-play between the rooms and the subjectively assessed vocal- and listening effort. The speakers' ratings of effort and the voice analysis were aligned and showed that there was a significant difference between the rooms regarding perceived effort, and the voice parameters grade of voice disorder and press. The "room" with no or little acoustical treatment was considered as the most vocally favorable. This result support previous findings that a well-damped room gives too little support to the speaker. There was also a correlation between vocal effort and cognitive strain. This knowledge may contribute to the understanding of vocal load and also to the area of classroom acoustics and speakers' comfort in general.