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Audible room acoustic differences of public preschools in the Gothenburg area

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ABSTRACT

Previous investigations have found high equivalent and maximum noise levels in preschools which raises concerns about children's hearing, well-being, and learning environment. Recent research also shows that preschool teachers have an increased risk of hearing-related symptoms and that they think the sound environment at the preschool affects the children's behaviour. In the research project, Supportive Preschool ACoustic Environment (SPACE) we want to find and formulate acoustic quality criteria giving the best prerequisites for preschool activity. In other words, how should we plan, furnish and build preschool facilities in the future to resolve the noise problem? A number of factors influence the sound environment in addition to the room acoustic; type of activity, number and personality of children and personnel, pedagogic noise control methodology, presence of interaction noise (e.g. chair scarping), and the use of noisy toys among others. The present study focus on the effect of room acoustics on the resulting sound environment in different preschool rooms. Are there audible differences between rooms when virtually using the same group of children as sound sources? The different sound environments are simulated by convolving anechoic measurements of preschool children with measured binaural impulse responses from public preschools. These are then compared in a listening test to assess perceptual differences. Swedish building regulations use reverberation time and installation noise as the main targets when planning the room acoustics of preschools, how do these and other room acoustic parameters relate to the subjective impression of the room?

The results of the current work will be finalised during summer 2019 and presented together with the poster at the International Congress on Acoustics in Aachen in September 2019.

Keywords: Room acoustics, Preschool, Audible differences

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