

On the dimensions of room acoustical perception

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ABSTRACT

With the Room Acoustical Quality Inventory (RAQI), a measuring instrument for the perceptual space of performance venues for music and speech has been developed. Based on a comprehensive list of 50 uni- and bipolar attributes for the room acoustical impression, 190 subjects rated the acoustical qualities of 35 binaurally simulated rooms, with symphonic orchestra, solo trumpet, and dramatic speech as audio content. Subsequent explorative and confirmative factor analyses yielded three possible solutions with four, six, and nine factors of room acoustical impression. The factor solutions, as well as the related RAQI items, were tested in terms of reliability, validity, and measurement invariance, and were cross-validated by a follow-up experiment, which provided re-test reliabilities and stability coefficients for all RAQI constructs. The resulting psychometrically evaluated measurement instrument can be used for room quality assessment, acoustical planning, and the further development of room acoustical parameters in order to predict primary acoustical qualities of venues for music and speech.

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