



Acoustic dissatisfaction in open-plan offices in Australia: Findings from a three-year study

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ABSTRACT

This paper summarises findings from a study of acoustics conducted over three years (2016–2018) in a diverse sample of open-plan offices across Australia. Activity noise was measured during working hours in 43 offices (Yadav et al. 2021), while room acoustic measurements were conducted in 28 of these spaces (Yadav et al. 2019). An occupant survey ($n = 349$) was also administered (Yadav et al. 2025). Median activity noise level ($L_{A,eq}$) was 53.6 dB, with a spectral slope of approximately -4 dB/octave. Noise levels were relatively consistent across variables such as work activity and surface area, but differed between offices with and without carpeting (Yadav et al. 2021). Room acoustic metrics, calculated according to ISO 3382-3 (ISO 3382-3, 2022), indicated that many offices lacked sufficient sound absorption and/or physical barriers. A combined analysis of survey responses, and metrics based on activity noise and room acoustic metrics was conducted. The results (Yadav et al. 2025) showed that privacy (visual and acoustic) was a stronger predictor of overall acoustic dissatisfaction than noise disturbance. Among activity noise metrics, L_{A90} and N_{90} were useful predictors of dissatisfaction; however, ISO 3382-3 metrics were stronger predictors overall. In particular, room acoustic metrics based on speech level decay ($L_{p,A,s,4m}$ and r_c) outperformed distraction distance (r_D) based on the speech transmission index. Reverberation time, used in some standards as design criterion (AS/NZS 2107, 2016; ISO 22955, 2021), was a poor predictor of occupants' perceptions overall. Notably, occupants in medium-sized offices reported greater acoustic dissatisfaction than those in larger spaces (≥ 50 occupants). Acoustic dissatisfaction also varied significantly with ceiling height, number of workstations, and years of experience, but not with the type of office layout (fixed vs. activity-based). These results underscore the complexity of characterising acoustic environments in open-plan offices and suggest directions for refining current evaluation methods (Yadav et al. 2025).

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