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Technology-Based Settings for Pronunciation Skills: Meta-Analytical Insights

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Abstract

This meta-analysis investigates the effectiveness of technology-assisted pronunciation training (TAPT) in enhancing second language (L2) learners' pronunciation skills, with a focus on instructional settings and technological aids as moderating variables. Drawing on 37 experimental and quasi-experimental studies, the analysis yields a medium to large overall effect size (Hedges' g
= 0.68), supporting the efficacy of TAPT. Moderator analyses reveal that classroom-based instruction demonstrates the highest impact (g = 0.78), followed by online and language lab environments. Among technological aids, mobile applications and automatic speech recognition (ASR) show the strongest effects. While some evidence of publication bias exists, the robustness of the findings is supported by a high fail-safe N. These results offer practical implications for integrating technology into pronunciation instruction and suggest directions for future research focused on learner profiles, intervention duration, and pedagogical contexts.

Keywords: automatic speech recognition (ASR), computer-assisted pronunciation training (CAPT), instructional settings, meta-analysis, mobile applications, pronunciation instruction, second language acquisition, technology-assisted learning