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Perceptual Strategies in Speech Quality Discrimination: A Comparison of Blind and Sighted Listeners

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Abstract

This study examines perceptual differences in speech quality discrimination using a novel ternary AX task, testing how blind and sighted participants perceive distortions in a synthesized speech signal. Two groups were tested across two difficulty conditions, involving differing levels of distortions. While sighted participants showed decreased performance as task difficulty increased, blind participants demonstrated greater stability and perceptual capacity. Additionally, groups struggled with different stimuli, suggesting that item-specific perceptual differences drive difficulty, rather than a uniform increase in task complexity. Acoustic analyses were conducted to explore potential factors influencing perception. These findings indicate that blind and sighted participants may rely on different auditory processing strategies, leading to group-specific difficulty patterns. Our results highlight the importance of individual perceptual mechanisms in speech discrimination, with implications for models of auditory perception and accessibility in speech technology.

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