

Developmental Trajectories of Metacognition in Auditory Serial Recall of Environmental Sounds

Leyu Huang

University of Lincoln, Lincoln, Lincolnshire, United Kingdom

Florian Kattner

Health and Medical University Potsdam, Erfurt, Potsdam, Germany

Timothy Hodgson

University of Lincoln, Lincoln, Lincolnshire, United Kingdom

Julia Föcker

University of Lincoln, Lincoln, United Kingdom

Abstract

Auditory streams with varying features (changing-state, e.g., J,K,L) impair serial recall more than repetitive streams (steady-state, e.g., J,J,J), known as the Changing-State Effect (CSE). Despite extensive CSE research, metacognitive development – how individual monitor recall under auditory distraction – remain unexplored. This study tested 26 adults (Experiment 1) and 40 children (5–12 years, Experiment 2) on auditory serial recall and meta-memory accuracy (self-estimate performance). Distractors (steady-state/changing-state letters) followed target sequences of environmental sounds. Results showed: (i) both distractor types modulate meta-memory accuracy (vs. silence) but not serial recall performance (ii) serial recall improved with age and (iii) the discrepancy between meta-memory accuracy and recall accuracy declined with increasing age. These findings reveal distinct developmental trajectories: while serial recall improves steadily with age, metacognitive accuracy in the presence of auditory distraction becomes more precise and less disrupted by such interference as individuals grow older, suggesting divergent mechanisms for memory performance and its self-monitoring under CSE.