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The Silent Guide: How Inner Speech Shapes New Action Learning and Performance

Saturday, September 13, 2025 2:10 PM (20 minutes)

Introduction
Although the role of language in action learning has always been overlooked, considering the evidence on the role of inner speech (IS) in driving several cognitive processes, we speculate that it plays a role in action learning as well. We used articulatory suppression to impair participants' IS access by disrupting the phonological loop, hypothesizing that IS inaccessibility could lead to poorer motor performances compared to a control group.

Methods
In this preregistered study, 104 healthy participants were randomly assigned to one of two groups: an Articulatory Suppression Group, where participants continuously repeated a syllable during action learning, and a Dual-Task Control Group, where participants executed a finger-tapping task matched in frequency with articulatory suppression. Both groups observed novel sequential hand actions with the sole purpose of reproducing them later.

Results
Participants in the Articulatory Suppression Group showed significantly lower action accuracy and execution quality during the recall phase compared to the control group. This group also showed a higher proportion of non-learners—individuals unable to reproduce the actions at all. Self-reported IS use was significantly lower during the action learning phase than during execution, confirming the effectiveness of articulatory suppression in disrupting IS.

Conclusions
These findings support the hypothesis that IS facilitates the encoding and retrieval of novel actions, offering new evidence in favor of a cross-modality property of IS which also contributes to motor learning. This expands our understanding of IS as a versatile cognitive tool, showing new evidence in relation to the role of language over cognition.

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