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The Relationship Between Gesture and Speech Predicts Who Will Learn to Solve a Chemistry Problem

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Abstract: When children explain their answers to tasks that they have yet to master, some produce gestures that include additional information not found in their speech. These children are likely to benefit from instruction in the task. Here we investigate the possibility that different types of gesture-speech relationships might index readiness to learn for adult novice learners. Adults, naïve to organic chemistry, were asked to create stereoisomers of molecules, a task that requires mentally transforming and drawing an alternative spatial arrangement of parts of the molecule. Adults whose gestures added correct information to the information conveyed in speech at pretest were more likely to learn on the task than adults whose gestures did not add information or added incorrect information. These findings suggest that, even for adult learners and complex tasks, gesture reveals implicit knowledge about the task at hand and can be used to identify who is ready to learn.