Knowledge of Examples Affects Conditional Reasoning About Math

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Abstract

Conditional reasoning, or reasoning with if-then statements, depends in part on knowledge. However, the mechanisms underlying this dependence are not fully understood. We propose that example knowledge—the ability to generate and categorize examples of logical possibilities—plays a central role, and therefore hypothesize that individual differences in example knowledge contribute to differences in conditional reasoning. Two studies tested this hypothesis in the domain of algebra. In Study 1, individual differences in example knowledge predicted differences in conditional reasoning about algebra when controlling for everyday conditional reasoning and general algebra knowledge. In Study 2, training designed to improve example knowledge improved conditional reasoning about algebra. We discuss implications of the findings regarding the mechanisms underlying the knowledge-dependence of conditional reasoning and the nature of individual differences in conditional reasoning.

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