Representational Primacy: The Effects of Early Categorization on Rule-Contingent Learning

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Abstract

Many important everyday tasks are *rule-contingent*, wherein the correct rule or solution to a problem depends on the scenario that is encountered (e.g., mathematical problem solving). In such cases, it can be useful to partition knowledge into corresponding categories. If a learner fails to acquire the right categories, or groups problems according to the wrong principles, learning can be significantly slowed due to failure to keep the various rules separate. Moreover, if a learner initially acquires the wrong categories, these representations may be difficult to relearn later, producing a type of representational primacy effect. Thus, we hypothesize that it is critical that learners form the correct category representations at the outset of learning. This idea leads to the prediction that learning can be improved if subjects are first trained to classify problems before attempting to solve them. We report two experiments manipulating the relative order of classification training and training on the full task—a problem-solving task in which the correct rule is contingent on the problem category. One group received classification training first and then trained on the full task, whereas the other group was trained on the full task first and then learned the corresponding categories. The final phase tested both groups on the full task; Experiment 1 used relational categories and Experiment 2 used relational and featural categories. Both experiments demonstrated an advantage of the classify-first group on the final test. Thus, representational primacy seems to play a critical role in rule-contingent learning.

Keywords: Category Learning, Problem Solving, Concept Formation, Representation, Rule-Contingent Learning.