Two-stem Analogy Task is a Better Test for Relational Reasoning

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Abstract

Analogy is considered a core cognitive capacity that enables relational reasoning. It has been commonly believed that relational reasoning can be tested by the four-term analogy task of type "what is to c as b is to a?" or "a:b::c:?" in short. In this study, we challenge this common belief by investigating an alternative hypothesis that this classic task is solvable only by attributional reasoning on attributional similarities, rather than relational reasoning on the relation of the two relations. A word vector model was employed to demonstrate how these two types of reasoning were performed in the classic three-stem analogy task "a:b::c:?" and the two-stem analogy task "a:b::?:?". The results showed that the two-stem analogy task was solvable only using relational reasoning, while the three-stem analogy task was solvable using both types of reasoning. It suggests that the two-stem analogy task is a better test for relational reasoning.

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