How can Euler diagrams improve syllogistic reasoning?

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Abstract: The present study investigates the question of whether and how Euler diagrams can improve syllogistic reasoning. Previous research reports that there is no evidence to show the psychological advantage of Euler diagrams in solving syllogisms. In our experiments, we use Euler diagrams with "named points", which are formulated within the simple Euler system introduced in our previous work. The diagrams in our system are distinctive in that they can represent a single categorical statement by a single diagram. It is predicated that the diagrams improve syllogistic reasoning in general, and in particular that some well-known errors in linguistic syllogistic reasoning could be blocked, mainly due to the fact that diagrams make explicit the subject-predicate relation of a categorical statement. The results show that the reasoning with Euler diagrams significantly improve subjects' performance, compared to the one without diagrams. We also discuss some models of diagrammatic inferences involved in solving syllogisms.