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Insight problem solving as a simultaneous dual problem solving: behavioral evidence from gaze tracking

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Abstract

Insight problem solving is often described by additional characteristics other than goal-directed search. The goal of the present study is to reformulate the computational process of insight problem solving. Specifically, we hypothesize that Aha! experience is likely to be induced by the simultaneous solution of the *dual problem*: Any insight problem is a dual problem where the solver needs to solve a meta problem by identifying “what the base problem to be solved is”. To test this hypothesis, we implemented a binarized image task, in which each participant was asked to answer what the hidden animal was in an ambiguated image. The results were consistent with the theoretical predictions that the distance from the target to the solver’s eye gaze reduces rapidly in the periods right before solving with Aha! moment. It suggests it is more likely to have Aha! moment, if the base and meta problem are solved almost simultaneously.