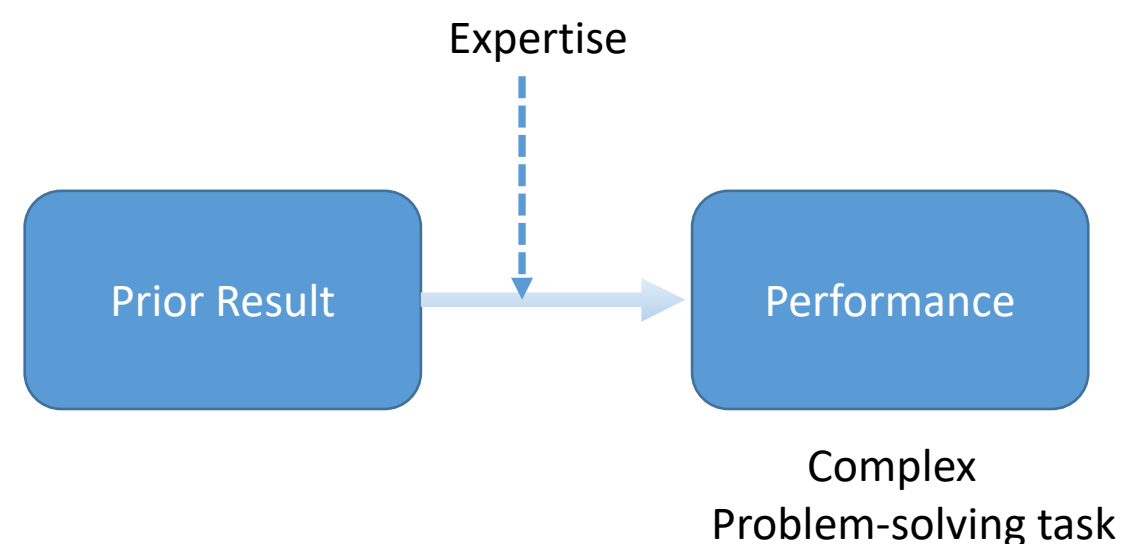


## Does Prior Result influence Performance in complex problem-solving Task: Empirical Findings using chess a behavior model

### ABSTRACTS

In a complex problem-solving task like chess: Does the Result (Win/Loss) of "prior Game" impact the performance on the "current Game"? if so , what are the moderating and mediating factors? We empirically validate our hypothesis based on the analysis of 80 Million Games played on lichess.org, the largest opensource chess database. We find that Prior result impacts the performance on the current game but is moderated by expertise.



### OBJECTIVE

Games are not just one particular environment for studying human behavior; they are the best environment. They are complex enough to simulate real-physical and social systems with great precision [Chabris, C. F. (2017)]. Attention is dynamically allocated via central control. Each time high conflict is met, control is engaged to enhance focus on the target. This amplified control is relaxed when high conflict is not experienced (Algom, D 2019). If "high conflict" accounts for performance on the current task, then it follows that performance "following an unsuccessful Task (Failure)" should be better than performance "following a successful trial (Success)."

Though Gratton effect : congruency effects (i.e., Stroop and flanker effects) are reduced following incongruent trials compared to congruent trials, has been found in simpler tasks and in lab conditions, in our research ,we holistically investigate various factors that influence the performance on cognitively demanding tasks in ecologically valid settings.

### METHOD

To establish chess players' levels of expertise, we used the Elo rating. We assigned players to two levels of expertise (non-expert vs. experts) divided in four classes of 200 Elo points each. The selected skill levels had the advantage that they occupied adjacent positions in the rating scale, which made comparisons easier.

