

Continuation of the 'Truth Wins' standard for modern analysis

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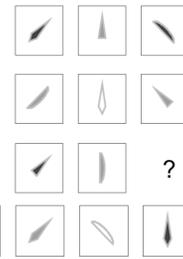
Which one is safer?



Long-term objective: characterize and improve same-skill collaboration.

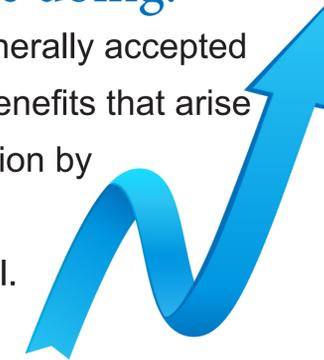
What we had done before:

- Created and normalized a set of culturally unbiased puzzles ⁽²⁾
- Conducted pilot studies in Spring 2019 and Fall 2019



What we are doing:

Improving the generally accepted measure of the benefits that arise from communication by controlling for performance level.



What we will do next:

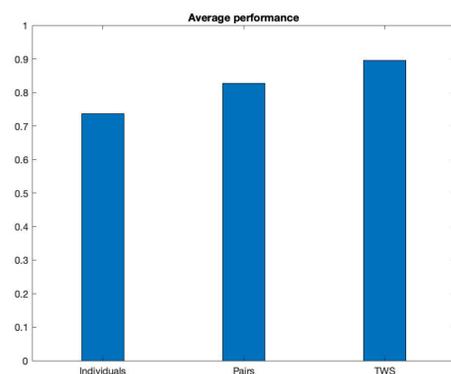
- Apply the relative gain analysis to the studies that previously failed to capture the benefits of cooperation
- In Spring 2021 conduct the main study



'Truth Wins' standard as a generally accepted measure

A group will arrive at the correct solution if at least one member proposes that solution ⁽¹⁾.

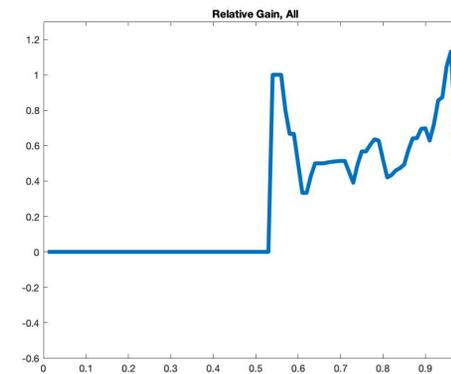
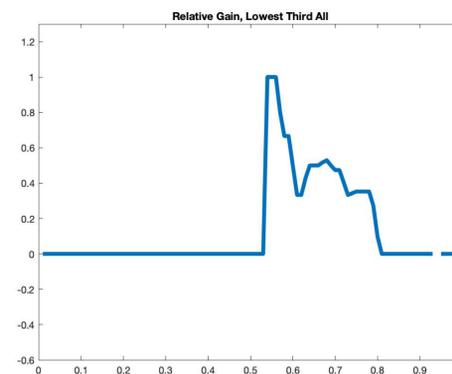
Cooperation is beneficial if the **average** of the group outperforms the **average** of the artificial (TWS) group.



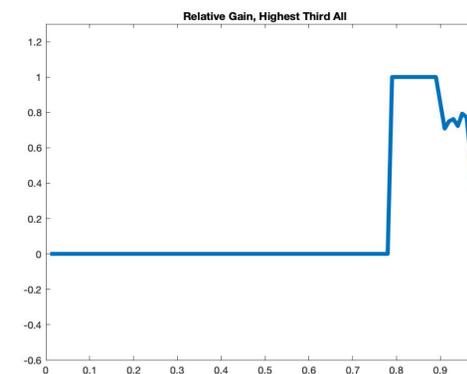
Relative Gain as a modern approach to the analysis

Compares the number of pairs that outperform individuals to the number of artificial pairs (TWS) that outperform individuals **for a given performance level**.

- Pairs < TWS → the relative gain (RG) = 0%;
- Pairs = TWS → the RG = 100%;
- Pairs > TWS → the RG > 100%.



Benefits of same-skill collaboration are not uniformly distributed



Best-performing groups benefit from cooperation more than worst-performing groups.

Personal achievements:

Before DARE:

- No programming experience
- Able to read one academic paper a week
- An independent learner



After DARE:

- Able to perform professional data analysis
- Able to analyze multiple papers a day
- Able to cooperate with other team members to ensure continuous workflow



Participating in DARE allowed me to obtain a "reality check" of my career aspirations and develop as a professional.

References:
(1) Lorge, I., & Solomon, H. (1955). Two models of group behavior in the solution of Eureka-type problems. *Psychometrika*, 20, 139–148. doi: 10.1007/BF02288986.
(2) Matzen, L. E., Benz, Z. O., Dixon, K. R., Posey, J., Kroger, J. K., & Speed, A. E. (2010). Recreating Ravens: Software for systematically generating large numbers of Raven-like matrix problems with normed properties. *Behaviour Research Methods*, 42(2), 525–541. doi: 10.3758/BRM.42.2.525.
Image sources:
(3) Image by Pierre Barthe retrieved from <https://www.enac.fr/en/enac-and-atr-launch-integrated-cadet-pilot-program>
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