Harnessing the wisdom of the inner crowd by exploiting the confidence in your decisions

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1. ABSTRACT

The “wisdom of crowds” effect describes the phenomenon whereby aggregating judgments of multiple individuals can lead to a more accurate judgment than the judgment of the average individual. In the absence of other people’s judgments, could one individual harness the wisdom of her “inner crowd”? We investigated whether individuals can improve the quality of confidence judgments in two-alternative forced choice tasks by either (a) averaging confidence judgments or (b) by selecting the judgment with the higher confidence (i.e. maximizing). We tested the performance of both strategies by means of a simulation study and three empirical studies. Our results show that (1) individuals can harness the wisdom of their inner crowd by exploiting confidence judgments and that (2) averaging is the safer and more robust strategy.

2. THEORETICAL BACKGROUND

When an individual holds two conflicting beliefs about a given issue but needs to make a final decision with an associated final confidence, there are at least two strategies that one can apply based on two confidence judgments:

1. Maximizing: Select the decision with the higher confidence (Koriat, 2012), and report the maximum confidence as the final confidence.

2. Averaging: Aggregate both confidence judgments by averaging them and report the averaged confidence as the final confidence (Ariely et al., 2000).

To assess the quality of confidence judgments, we calculated the Brier score, which is the mean squared deviation of one’s confidence judgment (c) from the actual outcome (o).

$$BS = \frac{1}{N} \sum_{i=1}^{N} (c_i - o_i)^2$$

Smaller scores indicate higher quality. In our simulation study we investigated how the wickedness of the environment influences the quality of averaged or maximum confidence judgments.

3. SIMULATION RESULTS

Environments can be relatively kind, where the majority of people agrees on the correct answer (probability correct > 0.5) or relatively wicked, where the majority of people agrees on the wrong answer (probability correct > 0.5).

4. EMPIRICAL STUDIES

Based on uncorrelated confidence judgments our simulation study shows that:

1. Averaging is a safe and robust strategy, because it consistently improves the quality of confidence judgments irrespective of the environment.

2. Maximizing is a risky strategy, because it can have strong effects, yet they depend on the wickedness of the environment.

5. METHODS

Ariely et al. (2000) • 64 participants answered 200 questions about relative city populations twice within one session

Koriat (2012) • 50 participants compared the length or surface area of 80 pairs of figures

New Study • 309 participants answered 25 general knowledge questions twice within one session

6. RESULTS

In all three studies, averaging boosts the overall quality of confidence judgments (relative to first judgments), whereas maximizing sometimes tends to improve and sometimes harms the quality of confidence judgments.

7. CONCLUSION

The presented results have two implications:

1. People can harness the wisdom of their inner crowd by exploiting confidence judgments.

2. When in doubt about the environment, it is safer to consistently average than to consistently maximize confidence judgments.

References
