CONFIDENCE JUDGMENTS AND ACCURACY

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ABSTRACT

The bat-and-ball problem (see Kahneman, 2011 for a complete explanation [3]) is often used to measure decision-making responses. The problem question is as follows*: "A bat and a ball cost $1.10 in total. The bat costs $1.00 more than the ball. How much does the ball cost?"*

Typically, participants answer 10 cents, because they answer using fast intuitive thinking (System 1) rather than thoughtful checking (System 2), also known as fast instead of slow thinking (Kahneman, 2011 [3]). According to Kahneman (2011)[3], the explanation behind the rapid incorrect answer is attribute substitution. In other words, participants replace a more difficulty question with an easier one. Kahneman (2011)[3] specifically points out that when people answer 10c, they are not checking the answer. They are endorsing the intuitive answer as well as missing the obvious question of why someone would ask such a simple question. They are taking the path of least effort (that is, they are cognitive misers). People are not bothering to check when they have an answer, even if that answer is incorrect. Kahneman [3] blames the failure to respond correctly to these simple questions as insufficient motivation, even going so far as to accuse the students who do this of being lazy. His explanation is that they are answering the question as quickly as possible.

This laziness argument was challenged in an experiment by de Neys, Rossi, and Houdé (2013)[1] who found that, contrary to prior explanations for this phenomenon, people do notice that they have made a substitution error and they are not blind to the fallacy in logic. The experiment required participants in a paper-and-pencil test to make a confidence judgment. However, confidence was evaluated with the critical question available to the participants to reconsider and check their answers. It is not clear from de Neys et al.[1] whether prompting participants for a confidence judgment also prompts them to reconsider their answers. The key question in the above study (de Neys et al. 2013[1]) was whether people noticed their mistakes immediately or only when prompted to consider their answers. No reaction time (RT) was reported so it was not clear whether the initial answer reflected a System 1 response that was mitigated after consideration. Participants showed lower confidence after being presented with the question and then asked to declare confidence while viewing the target question. That is, they were given the opportunity to reevaluate their answers. The paper did not provide evidence that they were not oblivious to the substitution until they were given the opportunity to check their answers. By measuring reaction time (RT) we can determine how many of the responses were initial substitution answers that were changed on reflection. There may also be a third group of respondents who answer with the System 1 response and then reevaluate immediately. That is, they answer 10c and then immediately realize that they have made a mistake.

Also, prior research indicated that men score higher on this question than women (Frederick, 2005[2]) and the issue of presenting only two questions was controlled for in the present study so that suspicion would not be aroused in students (Kahneman, 2011[3]).

Materials for the present study included the bat-and-ball problem with a control simple arithmetic problem. In addition, there were eight filler questions based on a fifth grade worksheet to camouflage the critical questions. Finally, there were the other two questions from the Cognitive Reflection Test (CRT; Frederick, 2005[2]).

Results indicated that 20% of participants got the bat-and-ball question correct. This is the mean rate of correct responses for competitive colleges. The average score on the CRT (bat-and-ball and additional two questions) was .6. All correct responses for the bat-and-ball problem were from women, in contrast to prior research.

There was no significant difference in confidence ratings for the more difficult bat-and-ball question and the easier subtraction question (96% to 95%). However, the mean RT for incorrect bat-and-ball answers was .4s whereas the RT for the easier question (all of which were correct) was .2s. Kahneman's [3] explanation for participants giving the incorrect answer for a relatively easy question was that the participants were not taking the time to check their answers. This does not seem to be the case as the participants are taking more time over the bat-and-ball question than the easier questions. An alternative explanation may be that participants are checking their answers for the bat-and-ball problem, but even after checking it they are still not getting the answer correct.

REFERENCES

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