

Categorizing Judgments as Likely to be Selected by Intuition or Deliberation¹

Aliya R. Dewey

Department of Philosophy, University of Arizona

De Neys argues against the exclusivity assumption: that many judgments are exclusively selected by intuition or deliberation. But this is an excessively strong formulation of the exclusivity assumption. We should aim to develop weaker, more plausible formulations that identify which judgments are likely to be selected by intuition or deliberation. This is necessary for empirical comparisons of intuition and deliberation.

De Neys observes that dual-process theorists often assume that certain responses under certain conditions are only possible for either intuition or deliberation. For example, he points out that it's often assumed that the incorrect response to the bat-and-ball task is the result of intuition, and the correct response is the result of deliberation. If true, this would be convenient: we could compare intuition vs. deliberation just by comparing processing that results in incorrect vs. correct responses to the bat-and-ball task, respectively. But De Neys offers two arguments for why this exclusivity assumption is false: one theoretical and one empirical.

For his theoretical argument, De Neys argues that the exclusivity assumption contradicts the only plausible explanation for switching between intuition and deliberation. He explains that switching occurs when intuition detects conflict between responses and causes deliberation to intervene and resolve the conflict by selecting one of the responses. However, this contradicts the exclusivity assumption: if some responses are generated by intuition and other responses are generated by deliberation, intuition won't be able to detect conflict between intuitive and deliberative responses. So, he concludes, both responses must be generated by intuition and re-generated by deliberation.

But we must be careful to distinguish between response generation and response selection. The switching model only contradicts an exclusivity assumption about response generation—as we just noted. However, his switching model is consistent with an exclusivity assumption about response selection: even if intuition *generates* both responses and deliberation *re-generates* them, it's still possible that intuition exclusively *selects* one response and deliberation exclusively *selects* another response. So, an exclusivity assumption about response selection is theoretically coherent, but is it empirically plausible?

For his empirical argument, De Neys argues that the exclusivity assumption contradicts a growing body of evidence. He points to two-response paradigms as an example: subjects must give a first response very quickly and then are given plenty of time to reconsider and give a second response. The paradigm is designed to prevent deliberation in the first stage, isolating an intuitive response,

¹ This document is the penultimate draft for a commentary on the article *Advancing Theorizing about Fast-and-Slow Thinking* by Wim De Neys, which is forthcoming in *Behavioral & Brain Sciences*.

and then to allow deliberation in the second stage, permitting a deliberative response. If intuitive responses to bias tasks are incorrect, as many assume, then the first responses should almost always be incorrect. But the evidence shows that many subjects who give the correct response on the second time gave the correct response on the first time too. This indicates that correct responses can be both intuitive and deliberative—contra the exclusivity assumption. I agree with De Neys that this evidence suggests that we're often wrong about which responses are selected by intuition vs. deliberation.

However, I think that it's critical to emphasize that we can't compare intuition and deliberation (see Section 4.2) unless we find better ways of categorizing responses as intuitive or deliberative. After all, we must classify responses as intuitive or deliberative in order to compare intuition and deliberation. For example, consider how Greene et al. (2001) looked for the neural correlates of moral intuition vs. deliberation. They had to start by categorizing moral judgments as intuitive and deliberative. This way, they could look for the neural correlates of intuitive and deliberative judgments. Then they could infer that the neural correlates of intuitive judgments were neural correlates for moral intuition itself and likewise for moral deliberation itself.

To be clear, I don't believe that Greene et al. (2001) correctly identified which moral judgments were intuitive and deliberative (see Kahane, 2012; Kahane et al., 2012). My point is only that they had to categorize moral judgments as intuitive and deliberative to identify the neural correlates of moral intuition and deliberation. Unless we're prepared to offer a better notion of exclusivity, though, it's unclear how else we could compare the neural basis for intuition or deliberation—or make any other comparison between them. So, I recommend that we should aim to develop weaker formulations of the exclusivity assumption: we should (a) only categorize responses as *more likely* to be selected by intuition or deliberation, (b) find more reliable ways of classifying responses as probably-intuitive and probably-deliberative, and (c) be careful to validate whether responses really are more likely to be selected by intuition or deliberation.

I believe that De Neys has made a valuable contribution here by calling attention to the exclusivity assumption and rejecting its strongest formulation. But the correct response, I think, is to calibrate our exclusivity assumptions more carefully. I've tried to do this in recent work, where I develop a weaker formulation of the exclusivity assumption that draws on switching models, like the one that De Neys offers here (Dewey, 2022). It claims that (a) conditions that impair metacognitive heuristics (e.g., that decrease the salience of the correct response) result in responses that are *most* likely to be intuitive and (b) conditions that improve metacognitive heuristics (e.g., that increase the salience of the correct response) result in responses that are *most* likely to be deliberative. Of course, I don't mean to be defending my account here: I'm just pointing to it as an example for how to formulate weaker exclusivity assumptions that avoid the issues that De Neys raises here.

Finally, this paper highlights a shift in the psychology of thinking and reasoning. Traditionally, single- and dual-process theorists mostly cared about how to compare intuition and deliberation. But these questions have fallen out of vogue after years of intractable debates between single- and dual-process theorists. Recently, the focus has shifted from comparing intuition and deliberation to the metacognitive mechanisms that switch between intuition and deliberation. But old questions about how to compare intuition and deliberation deserve answers too! De Neys does call for answers to these questions in Section 4.2, but I'd urge a more specific call: to get started, we need

better formulations of the exclusivity assumption. So, I encourage the reader to read this paper as a welcome challenge from De Neys to sharpen our exclusivity assumptions so that we can get clearer on how to reliably compare intuition and deliberation.

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