Behavioral and Brain Sciences
Commentary Proposal (De Neys)
--Manuscript Draft--

Manuscript Number:	
Article Type:	Commentary Proposal (De Neys)
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Commentary Proposal (De Neys)

1. Name of the target article for which you are submitting a commentary proposal

Advancing Theorizing about Fast-and-Slow Thinking

2. All authors

Jason Low, Stephen Butterfill and John Michael

3. What aspect of the target article or book you would anticipate commenting on

Title: 'A View from Mindreading'

Our commentary concerns the evidential basis for De Neys' proposed model. De Neys (2022, p. 11) writes, 'The fundamental problem I will raise is [...] there is no solid empirical ground for the exclusivity assumption.' But in considering evidence, the domain of mindreading is mentioned only in passing. We will argue that a closer look at the domain of mindreading reveals abundant evidence. We also highlight methodological and theoretical consequences of including more research on mindreading.

Methodologically, the studies De Neys' relies on mostly involve observing a single, direct, explicit choice response. In mindreading, by contrast, the norm is to observe multiple responses including indirect and implicit responses. These include anticipatory looking and verbal responses (Low, Drummond, Walmsley, & Wang, 2014), response times and choices (Edwards & Low, 2017), or postural sway and purposive action (Zani, Butterfill, & Low, 2020). The lack of solid ground De Neys rightly identifies in the domain of reasoning may be due in part to the predominance of less sensitive measures than are commonly used in studying mindreading.

Where does this leave the exclusivity assumption? De Neys is surely right that as automatization is possible, any conclusion arrived at by a slow process could, in principle at least, also be arrived at by a fast process. But it does not follow from this that every fast process can generate any response. And indeed, the above findings from mindreading research raise the possibility that some fast mindreading processes have signature limits that restrict the range of responses they can generate – which provides a key methodology that could perhaps be adopted in reasoning research too.

One theoretical implication of considering mindreading concerns De Neys proposal that uncertainty monitoring determines whether System 2 is activated at all (§3.2 and figure 1). Discoveries about mindreading indicate that this cannot be the whole story. To illustrate, Ruffman, Garnham, Import, & Connolly (2001) identifies a scenario involving false belief where System 1 and 2 processes generate conflicting responses (as indexed by anticipatory looking and explicit choices, which imply incompatible predictions). Despite the conflict, the

decisions participants' made in placing bets (they went all in) reveals they felt no uncertainty. Apparently, then, System 2 can be activated even in the absence of System 1 conflicts and even without uncertainty.

Widening De Neys' view to consider mindreading not only points to some evidence that is hard to accommodate but also yields a conclusion we think De Neys will welcome: how fast and slow interact is a truly deep problem.

4. The relevant expertise you would bring to bear on the target article

Low is a developmental psychologist who has studied mindreading and provided empirical and theoretical defence of a two systems theory:

- Low, J., Apperly, I. A., Butterfill, S. A., & Rakoczy, H. (2016). Cognitive Architecture of Belief Reasoning in Children and Adults: A Primer on the Two-Systems Account. Child Development Perspectives, 10(3), 184–189. https://doi.org/10.1111/cdep.12183

- Edwards, K., & Low, J. (2019). Level 2 perspective-taking distinguishes automatic and non-automatic belief-tracking. Cognition, 193, 104017. https://doi.org/10.1016/j.cognition.2019.104017

Butterfill researches philosophical issues in development and has defended a two systems theory of mindreading:

- Apperly, I. A., & Butterfill, S. (2009). Do humans have two systems to track beliefs and belief-like states? Psychological Review, 116(4), 953–970. https://doi.org/10.1037/a0016923

- Butterfill, S. A. (2020). The Developing Mind: A Philosophical Introduction. London: Routledge.

Michael opposed a two systems theory of mindreading on theoretical grounds but provided empirical evidence in support of it:

- Christensen, W., & Michael, J. (2016). From two systems to a multi-systems architecture for mindreading. New Ideas in Psychology, 40, 48–64. https://doi.org/10.1016/j.newideapsych.2015.01.003

- Michael, J., Wolf, T., Letesson, C., Butterfill, S., Skewes, J., & Hohwy, J. (2018). Seeing it both ways: Using a double-cuing task to investigate the role of spatial cuing in Level-1 visual perspective-taking. Journal of Experimental Psychology: Human Perception and Performance, 44(5), 693–702. https://doi.org/10.1037/xhp0000486