Reply to commentary by Moore and Haggard

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We are very happy to see that Moore and Haggard (2006) welcome the introduction of CBP as a useful experimental method for investigating introspection and intentionality, but while they urge caution in the extent of the application of our method, we can do nothing but energetically encourage its use. When Moore and Haggard write “in line with Nisbett and Wilson’s hypothesis, the CBP suggests that our introspections are confabulatory”, they are not entirely correct. The results of the studies we have done so far using the CPB suggest that introspections about (some forms of) decisions may (sometimes) be confabulatory. But the paradigm itself is neutral about this point. In fact, from an analytic perspective we would have preferred to find clear patterns of differences between the NM- and M-reports, because that would have allowed us to start building up a contrast case for different modes of introspective reporting, and to eventually perhaps arrive at a powerful generalization about truthful and confabulatory content. Now, as Moore and Haggard note, we have a more sweeping and difficult hypothesis to test in further experiments, namely that the NM-reports may contain lots of confabulatory elements too.

What would it mean if this hypothesis were true? We suspect that part of the caution urged by Moore and Haggard about the CBP lies in a general worry that overstating the conclusions of the present findings could do wrongful damage to the image we have of ourselves as insightful and rational creatures. However, we feel it is unfortunate that efforts like those of Nisbett and Wilson (1977) and Wegner (2002) often get bundled with the idea of a demotion of the powers of the human mind. They (and we) are not here to con people or to manipulate them, but to map out the relationship between the concepts of everyday psychology and scientific theories of introspection and intentionality. As Dennett (1987) writes:

We would be unwise to model our scientific psychology too closely on these putative *illata* (concrete entities) of folk theory. We postulate all these apparent activities and mental processes in order to make sense of the behavior we observe—in order, in fact, to make as much sense possible of the behavior, especially when the behavior we observe is our own...each of us is in most regards a sort of inveterate auto-psychologist, effortlessly *inventing* intentional interpretations of our own actions in an inseparable mix of confabulation, retrospective self-justification, and (on occasion, no doubt) good theorizing. (p. 91, emphasis in original).
What needs to be realized in the context of a theory like this is that both the confabulation and the good theorizing part need to be taken seriously (indeed, they are flip sides of the same coin). Framing our work in line with the more general debate on change blindness we can see that counter-intuitive insights from this type of research might lead to such everyday improvements as smarter traffic intersections, more effective computer-interfaces, better procedures for witness testimony, etc. Conversely, even if all the posturing in the world about “direct phenomenological experience” would turn out to be unfounded, an experimental finding like choice blindness would still be bound at the limits by decisions and practices we know to be of great importance in everyday life. Whichever way our arguments turn, clever advice will still be passed, arguments will still be had, changes of mind will still come suddenly, constitutions will still be written, bridges will still be built, therapists will still find work, and sports commentary will still be largely pointless.

That much said we are not convinced by the particular boundaries that Moore and Haggard draw for the CBP. In contrast to our exploratory work on choice blindness, the research on agency they present is carried by a strong theoretical framework developed within the field of computational motor control (e.g., Wolpert & Ghahramani, 2004, and taken to its limit as a general model of cognition by Grush, 2004). But the argument Moore and Haggard present about the artificiality of the CBP really deserves to be stood on its head. As we said in the main article, we do not want to pretend that the choices made in our task were of special importance to the participants, but it is a type of decision people are very familiar with, and undoubtedly many people have strong opinions about facial attractiveness. In Hall, Johansson, Tärning, Deutgen, and Sikström (in preparation), we have taken this a step further, and extended the study of choice blindness to decisions made in more naturalistic settings. In this study, we set up a tasting venue at a local supermarket and invited passerby shoppers to sample two different varieties of jam and tea, and to decide which alternative in each pair they preferred the most. Immediately after the participants had made their choice, we asked them to again sample the chosen alternative, and to verbally explain why they chose they way they did. At this point, we secretly switched the contents of the sample containers, so that the outcome of the choice became the opposite of what the participants intended. All in all, no more than a third of the manipulated trials were detected, thus demonstrating considerable levels of choice blindness for the taste and smell of two different consumer goods. Even for such remarkably different jams as spicy cinnamon apple vs bitter grapefruit, or for the smell of teas like sweet mango vs liquorice pernod, were no more than a fifth of the manipulation trials detected concurrently, and less than half counting all forms of detection.

Obviously, this does not cover the range of truly important choices (like moral decision making) that Moore and Haggard challenge us to take on, but it can still be effectively contrasted with the paradigmatic experiments of their own agency research. Do Moore and Haggard really find it artificial to study intentionality and introspection in this way, when they themselves bring people into the lab to have them stare at a revolving clock face and try to judge the exact moment when they feel the urge to wriggle their finger, or to sit through countless trials that vary the contingencies between pushing a button and hearing a tone (Haggard, Clark, & Kalogeras, 2002; Haggard & Clark, 2003; Lau, Rogers, & Haggard, 2004)?

To put the point more constructively, we actually agree with Moore and Haggard that the CBP creates a very special and anomalous type of feedback, but this anomaly is only introduced to pry apart the otherwise “inseparable mix” of intentional action and verbal report so vividly described by Dennett in the quote above. We gather Moore and Haggard have similar reasons for targeting intentions in the domain of timing judgments, only their preferred strategy is to isolate and protect the “quite thin and evasive” experience of intending (Haggard, 2005, p. 291), from real-world contextual influences (still, even within this paradigm evidence indicates that judgment of the timing of intentions are not exclusively predictive, see Lau, Rogers, & Passingham, 2006; Lau, Rogers, & Passingham, in press).

In our view, both these strategies are viable in the short run, but to study agency “broadly construed” as “the ability to interact with the environment through self-generated action”, as Moore and Haggard put it, we better be prepared to include in our modeling the full array of human feedback and interaction effects, includ-

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1 Many people care about facial attractiveness, but not all... at an online discussion forum after the publication of Johansson, Hall, Sikström, and Olsson (2005) we found a post exclaiming the result of the study to be utterly meaningless because all faces really look the same. This poster went on to state that the ultimate test of choice blindness would be to try to manipulate choices made between pictures of sports cars!
ing the dreaded “experimenter-participant dynamics” (which is just another term for the ubiquitous social interactions in which most of our intentions are embedded), which they suspect might explain why participants in our studies does not report detecting the manipulations. A simple but effective way of investigating this type of dynamic in the CBP is to measure the potential surprise of the participants when debriefed about the actual design of the experiments. After having tested close to 500 participants we can confidently say that many of them are utterly surprised at being told that their choices have been manipulated. Another way of getting at the same point is to see how participants that did not report any of the switches respond to a hypothetical question about whether they think they would have noticed anything if we had included any such manipulations in the experiment. In Johansson et al. (2005, supporting online material), we included this question in the post-test interviews, and a full 84% answered that they would have noticed if they had been presented with mismatched outcomes in this way (thus displaying what might be called “choice blindness blindness”). Given this, it seems very odd that they actually might have noticed the mismatched outcomes, but nevertheless withheld it from us.

References