

Commentary on Newell and Shanks:
"Unconscious influences on decision making: A critical review"
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Why decision making may not require awareness

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Abstract

Newell and Shanks argue against the idea that any significant role for unconscious influences on decision making has been established by research to date. Inasmuch as this conclusion applies to the idea of an "intelligent cognitive unconscious" we would agree. Our concern is that the article could lead the unwary to conclude that there are no unconscious influences on decision making – and never could be. We give reasons why this may not be the case.

We begin by raising some general methodological issues regarding the assessment of insight, and then move to considering other examples from our own work that also bear on the thesis of the article. The first methodological issue that we wish to raise regards the possible knock on effects of measuring insight in the stringent way that the authors recommend. Whilst we agree that the immediacy criterion is well-motivated in principle, the concurrent measurement of awareness with performance could predispose participants to use a conscious decision strategy in a situation where they may otherwise use an unconscious strategy. Indeed, this criterion seems fundamentally at odds with Newell & Shanks's recommendation that highly reflective situations should be avoided in the study of unconscious decision making. The authors argue that on-line judgments do not alter judgment strategies by citing a study which showed that the inclusion of an on-line awareness measure made no difference to performance (Lagnado et al., 2006) but in reaching this conclusion they are relying on a null result (an approach that they criticise when it provides evidence in support of unconscious processes). Furthermore, the absence of performance differences does not rule out the possibility that different processing strategies are being used to obtain a similar level of performance in the two versions of the task.

The second methodological issue pertains to the narrative rather than the systematic review approach that appears to have been adopted in the article. We agree with the authors that a focus on particular influential domains in such a review is entirely appropriate, but felt that a systematic search strategy for identifying studies in each domain should have been articulated. For example, work we have conducted has

found some evidence for unconscious influences on a variant of the IGT (Dunn et al., 2011) that we feel offers some support for the unconscious account and would have been relevant here. In particular, using the stringent insight criterion outlined by Maia & McClelland (2004) that meet the reliability, relevance, immediacy and sensitivity criteria, we found that participants behaviourally acquired a modified IGT task prior to being able to articulate conscious awareness. While the methodology of this study can also be criticised (on the basis of low power), this nevertheless is some evidence for unconscious decision-making influences. Therefore, we feel the review can be critiqued on the grounds that its coverage of each domain is in parts selective.

The third methodological issue is that the insight literature has generally neglected a potentially prominent role for individual differences – namely that individuals' performance may be more or less driven by unconscious influences. Consistent with this position, verbal reports indicate that the degree to which performance on the IGT is driven by conscious awareness varies between individuals (e.g. Guillaume et al., 2009 although we acknowledge the limitations of the way awareness was indexed in this study). Similarly, individual differences exist in the extent to which anticipatory bodily signals (arguably a measure of unconscious influence) are associated with task acquisition on the IGT and its variants (Guillaume et al., 2009; Dunn et al., 2011).

If marked individual differences do exist, this means that attempts to characterise behaviour at the population level are likely to be doomed to failure. In other words, the question should shift from "is behaviour driven by unconscious influences?" to "in which individuals and contexts is behaviour most driven by unconscious influences?"

Turning now to examples taken from our own research that are also relevant to this debate, our position is that there are other types of unconscious influence on decision making, in particular the influence of automatic, associative processes on behaviour. The case is slightly complicated by the fact that associative processes do not have to proceed in the absence of awareness, but equally they do not require it either (McLaren, Green and Mackintosh, 1994), which immediately raises the possibility that there can be instances of unconscious influences on decision making involving processing of this type. We will focus on the demonstrations of peak-shift in humans by Jones and McLaren (1999) and Livesey and McLaren (2009), (though we could equally appeal to demonstrations of implicit sequence learning by Jones and McLaren, 2009, and Spiegel and McLaren, 2006) which make the point that the decisions made by participants are quite different when they are aware (a monotonic function consistent with rule use) or unaware (a non-monotonic function consistent with peak-shift) of the contingencies in play. Participants had to classify green squares by pressing one of two keys. The participants were not informed that the squares varied in either brightness (1999) or hue (2009), and so the correct response had to be learned by trial and error (they were given feedback). During a subsequent test phase (without feedback) they were shown stimuli that varied over a much wider range of brightness or hue. At this point those participants that were unable to specify the correct attribute to guide their decisions exhibited the typical "peak-shift" pattern of responding seen in similar experiments with pigeons (e.g. Hanson, 1959). Other participants who became aware of the attributes relevant to responding (either during training or testing) showed a different pattern, with performance improving monotonically as they moved from the training stimuli to more extreme values.

The awareness test used in this experiment clearly fails the sensitivity criterion that the authors would apply, and yet our point is that there is actually a strong case to be made for this being an example of unconscious influences on decision making. The key here is the correlation between verbal report and the pattern of performance. If participants say they are aware of the critical attribute's role in the task – they show one pattern. If they are not aware of it – they show a different pattern similar to that seen in pigeons. The authors may still argue that both patterns of performance are due to conscious cognitive processes, however, this would lead to an entirely new interpretation of peak-shift in pigeons. If the explanation in terms of conscious cognitive processes is taken to apply only to humans, then we must ask why such an unparsimonious position is being adopted, with one explanation for humans and another for infra-humans. Either way, this type of evidence poses a considerable challenge for the analysis offered in this article.

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