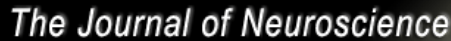


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Dominik R. Bach, Ben Seymour, and Raymond J. Dolan

Neural Activity Associated with the Passive Prediction of Ambiguity and Risk for Aversive Events

J. Neurosci. 2009; 29: 1648-1656 [\[Abstract\]](#) [\[Full text\]](#) [\[PDF\]](#)

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 Angela A Stanton (12 February 2009)

The correct definition of risk and ambiguity would have provided different results

12 February
2009

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Send letter to journal:
[Re: The correct definition of risk and ambiguity would have provided different results](#)

[Email](#) Angela A Stanton

In Bach et al. (2009) the authors state the definition of risk and ambiguity incorrectly. They write (in the abstract) "In economic decision making, outcomes are described in terms of risk (uncertain outcomes with certain probabilities) and ambiguity (uncertain outcomes with uncertain probabilities)." Both of these statements are incorrect. In economic theory, risk is defined as fully known outcomes and fully known probabilities (what is unknown is the "specific" outcome that will materialize) and ambiguity is defined as fully known outcomes and unknown probability distribution (the probability distribution can be estimated by beliefs).

Furthermore, the authors define "ignorance" suggesting that ignorance is that in which probabilities of outcomes are unknown and are unknowable "unless exploration and learning are permitted" (page 1648). Placed in this context, there is no difference between ambiguity and ignorance, because in both cases, some information is missing and beliefs can be used to make up the missing information--even if exploration and learning are not permitted. I suggest that rather than ignorance, they tested a version of ambiguity in which the experimenters knew the difference between the types of ambiguity forthcoming but the experimental subjects did not. Hence the unsurprising result of no distinction in brain activation between the cases of ambiguity and ignorance.

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