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Proceedings of the Annual Meeting of the Cognitive Science Society

Title
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Permalink
https://escholarship.org/uc/item/5235b655

Journal
Proceedings of the Annual Meeting of the Cognitive Science Society, 31(31)

ISSN
1069-7977

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Publication Date
2009

Peer reviewed

Using Reaction Times to Compare Two Models of Randomness Perception

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Abstract: The overalternating bias is that people rate sequences with an excess of alternation as more random than prescribed by information theory. There are two explanations: local representativeness (Kahneman & Tversky, 1972) and the implicit encoding hypothesis (Falk & Konold, 1997). The aim of the current experiment is to compare predictions derived from the explanations in a reaction time experiment. The measure random(X) proposed by Griffiths & Tenenbaum (2004) was used to quantify the subjective randomness of a set of binary sequences. If the implicit encoding hypothesis holds, we should see reaction times increase monotonically with random(X), whereas local representativeness predicts faster reaction time for low and high values of random(X) and slower reaction times for medium values of random(X). Results support the implicit encoding model.