

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 $\text{random}(X)$ 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 $\text{random}(X)$, whereas local representativeness predicts faster reaction time for low and high values of $\text{random}(X)$ and slower reaction times for medium values of $\text{random}(X)$. Results support the implicit encoding model.