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Opfer, John E.; Thompson, Clarissa A.; Kim, Dan

Free versus anchored numerical estimation: a unified approach.

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Summary: Children's number-line estimation has produced a lively debate about representational change, supported by apparently incompatible data regarding descriptive adequacy of logarithmic and cyclic power models. To test whether methodological differences might explain discrepant findings, we created a fully crossed 2×2 design and assigned 96 children to one of four cells. In the design, we crossed anchoring (free, anchored) and sampling (over-, even-), which were candidate factors to explain discrepant findings. In three conditions (free/over-sampling, free/even-sampling, and anchored/over-sampling), the majority of children provided estimates better fit by the logarithmic than cyclic power function. In the last condition (anchored/even-sampling), the reverse was found. Results suggest that logarithmically-compressed numerical estimates do not depend on sampling, that the fit of cyclic power functions to children's estimates is likely an effect of anchors, and that a mixed log/linear model provides a useful model for both free and anchored numerical estimation.

Classification: F22 F32 C32

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