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Spatial-Numeric Associations Distort Estimates of Causal Strength

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Abstract

When individuals provide magnitude estimates using numeric scales, they may be influenced by spatio-numeric biases. In Western, English-speaking cultures smaller magnitudes are associated with the left side of space and larger with the right. We demonstrated the impact of spatial-numeric associations on judgments of causal strength in two trial-by-trial causal learning experiments. Causes appeared on either the left or right side of a computer screen. In Experiment 1, participants made casual judgments using a number line either increasing in magnitude from left to right or decreasing in magnitude from left to right. In Experiment 2, participants made judgments using a non-linear circular target with the depth of hue saturation representing causal strength. In Experiment 1, participants gave higher causal ratings to causes appearing in the space associated with larger numbers on the number line. These influences disappeared when the linearity of spatial-numeric associations was removed in Experiment 2.