How the Physicality of Space Affects How We Think about Time

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Abstract: Time is an abstract concept that is better understood when it is mapped onto space. One mechanism to accomplish this mapping is a reference frame. Previous research has shown the orientation and direction parameters of a spatial reference frame are involved in understanding time. For example, for English speakers, time is organized horizontally and runs from left (past) to right (future). The current experiments focus on the scale parameter. Experiment 1 changes temporal scale across trials, and illustrates that the scale parameter is set, as evidenced by a cost when the parameter value changes. Experiment 2 examines the correspondence between the spatial scale and the temporal scale, requiring participants to map small or large temporal distances to small or large spatial distances. The results illustrate flexibility in this mapping. Together these experiments support the idea that all the parameters of a spatial reference frame are used when understanding time.