Learning to put time in its place: The development of spatial gestures for time

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Background

Cross-linguistically, talk of time uses the language of space: “I’m looking forward to ISGS6!” [3, 6]

As early as five years old, children are able to spatialize time using external representations [e.g., 5, 8].

Adults also use space to gesture about time [e.g., 1, 2, 4, 7], using length and location to represent temporal order and duration [7]. English adults point leftward/backward to refer to the past, rightward/forward for the future [2]. Little is known about the development of these temporal gestures, or of metaphorical gestures more generally.

We addressed two questions about temporal gestures:

(1) What is their developmental timecourse?
(2) How do they relate to the comprehension of temporal language (e.g., tonight) & spatial artifacts (e.g., timelines)?

Methods

Participants: Children (5;0 - 8;11) years old and adults (not analyzed here) completed two tasks, order counterbalanced.

Task 1, Timeline Placement: tests comprehension of events and temporal terms and the ability to map them to a spatial artifact. Three sets of four items were placed on a timeline using crayons [cf. 5, 8]

Task 2, Contrastive Definitions: designed to elicit spontaneous temporal gestures. Participants were asked to define contrastive terms.

"Can you teach me the difference between tomorrow and yesterday?"

(1) tomorrow vs yesterday (2) tonight vs last year (3) last week vs next week (4) this morning vs yesterday (5) tonight vs last year

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Results: Timeline

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Conclusions

- As young as 5yo, children use spatial properties of gesture (length, location) to represent temporal duration & relations
- By 5yo, children can use a timeline to indicate relative order and past/future of temporal terms and events, and this continues to improve throughout early school years [cf. 5, 8]
- Ongoing research is looking at interrelations between temporal gesture, the ability to use spatial artifacts, and comprehension of temporal language

References