Postdiction enhances temporal experience

Robert Walter-Terrill & Brian Scholl (Yale University)

Motivation

Postdiction
The perception of a stimulus presented at time t can be modified by a stimulus presented at time t+1

Example: Apparent Motion

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<thead>
<tr>
<th>Stimulus</th>
<th>Experience</th>
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In a seeming paradox, the second flash triggers the percept of motion leading up to the second flash!

Experiment 1: Temporal order in a single location

Which colors appeared when?

Four unique colors appear briefly ~ two at a time, one in each circle ~ followed by a task-irrelevant postcue. Observers then simply report which colors appeared when for a single target circle.

Enhanced temporal experience driven by valid postcues even though the colors were long gone by that time.

Experiment 2: Temporal order across multiple locations

When did the target flash?

All circles flash ~ 2 at a time ~ followed by either a valid or invalid postcue. Observers then simply report whether a target circle flashed first, second, or third.

Valid postcues also enhance temporal experience relative to locations external to the cue.

Conclusions

Postdiction is more sophisticated than previously thought

Though postdiction is fundamentally temporal, previous studies have only looked at its impact on "static" properties (e.g. shape, orientation, location).

In contrast, here we show that postdiction also enhances temporal discrimination both within the cued location and relative to non-cued locations.

One postcue enhances our perception of multiple stimuli

This constitutes the first demonstration of a single post-cue improving performance across multiple objects.