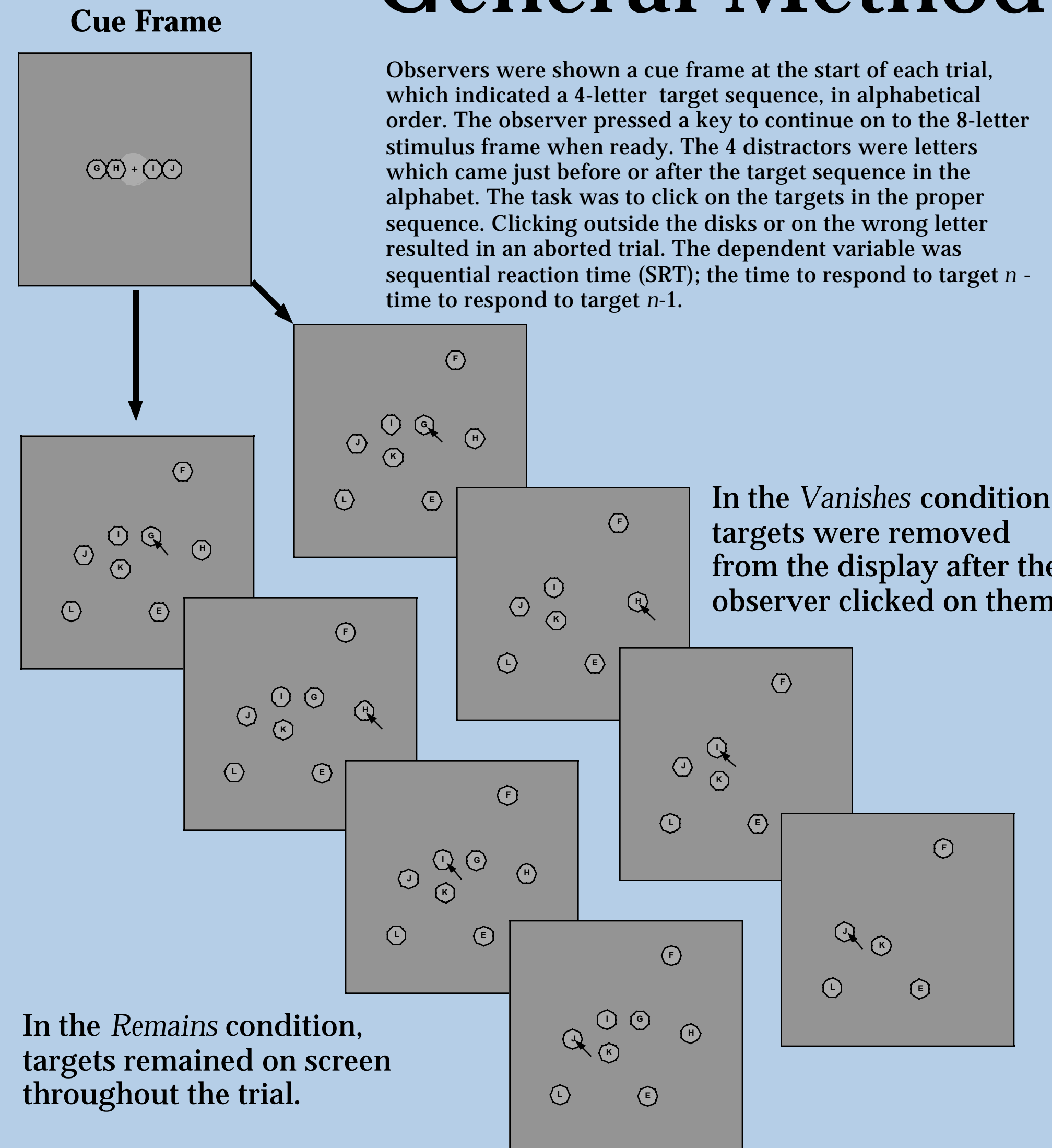


# Where have you been? Where are you going?

Our goal is to introduce a new multi-target localization task that can be used to explore the temporal and spatial contexts of search. We presented observers with a static array of letters and asked them to locate a sequence of targets on each trial (e.g., find the letters, g, h, i, & j in that order). The goal of search is often to be able to make a motor response to the target's location, so the task was to identify each target by clicking on its location, in the proper order. The temporal context of the search for "h" includes "where you've been" (prior targets, g) and "where you're going" (future targets, i & j).

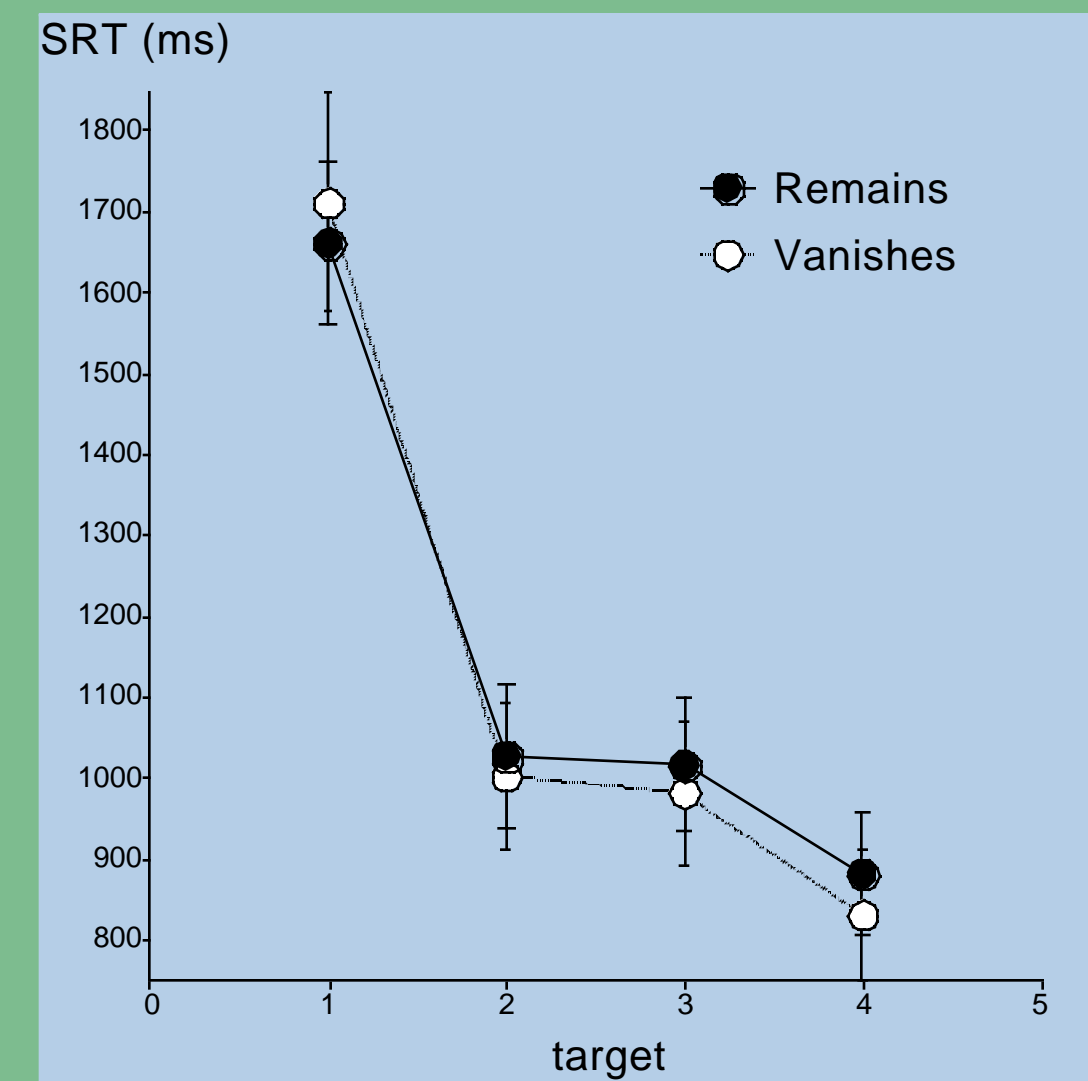
## General Method



## Experiment One

Does "where you've been" affect "where you're going"?

In the basic experiment, we compared the Remains and Vanishes conditions.



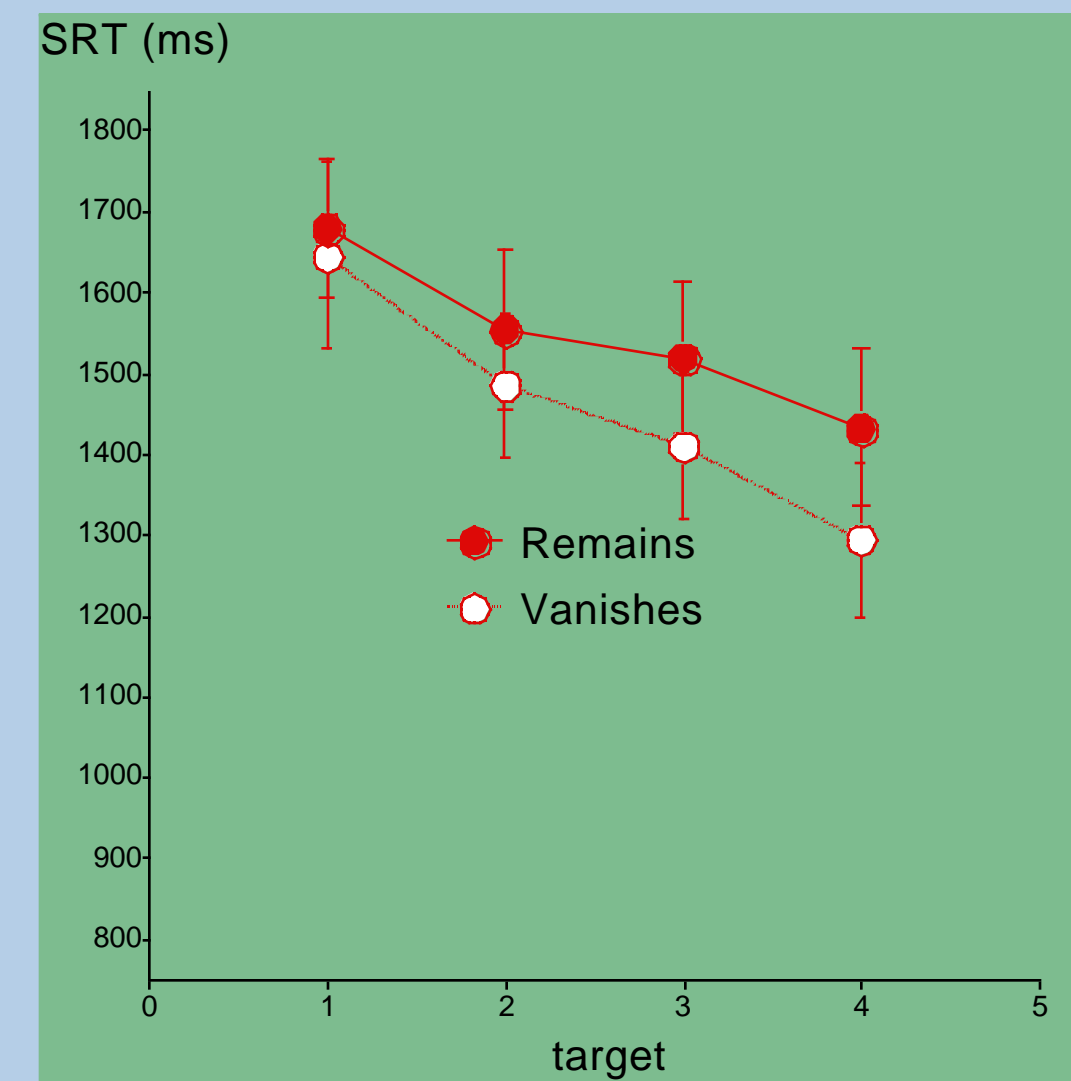
SRT decreased with targets, whether targets were physically removed from the display or not.

The large decrease from the 1st target to the second target suggests that observers are able to plan ahead while searching for the initial target.

## Experiment Two

Do observers plan ahead?

In this experiment, we prevented advance planning. Every time observers made a response, future targets & distractors were moved to new disks (shuffled).



When observers couldn't plan ahead, the large SRT drop to the 2nd target was eliminated. SRTs in the Remains condition were slower overall.

Observers are planning ahead at least one step, while still keeping track of past targets.

## Efficient memory for targets in a visuo-motor sequential search task

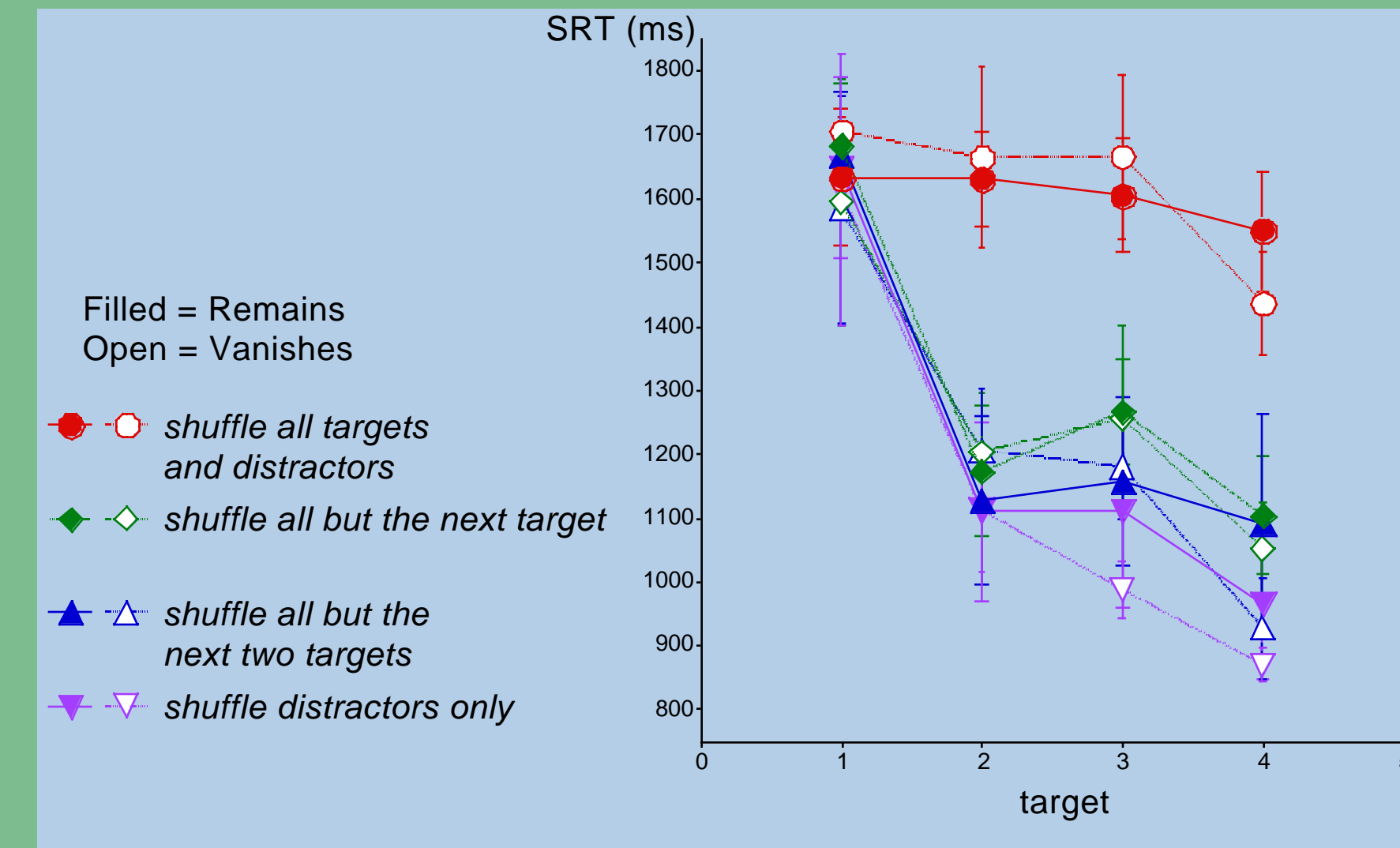
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## Experiment Three

How far ahead do observers plan?

Here, we shuffled the distractors, but left alone the next target in the sequence, so that observers could plan ahead one step. We did the same for the next two targets, etc.



Having the next target be predictable gave observers a huge advantage. Observers also picked up some information about all 4 targets, if it was available, but this was a smaller effect.

## Conclusions

This task is a promising method to explore temporal context in search

You keep track of up to 4 prior targets.

You plan at least one step ahead, if not more.

Comments & Requests