Dynamics of Attention and Visual Working Memory

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Background

Left

How many blue objects are there?

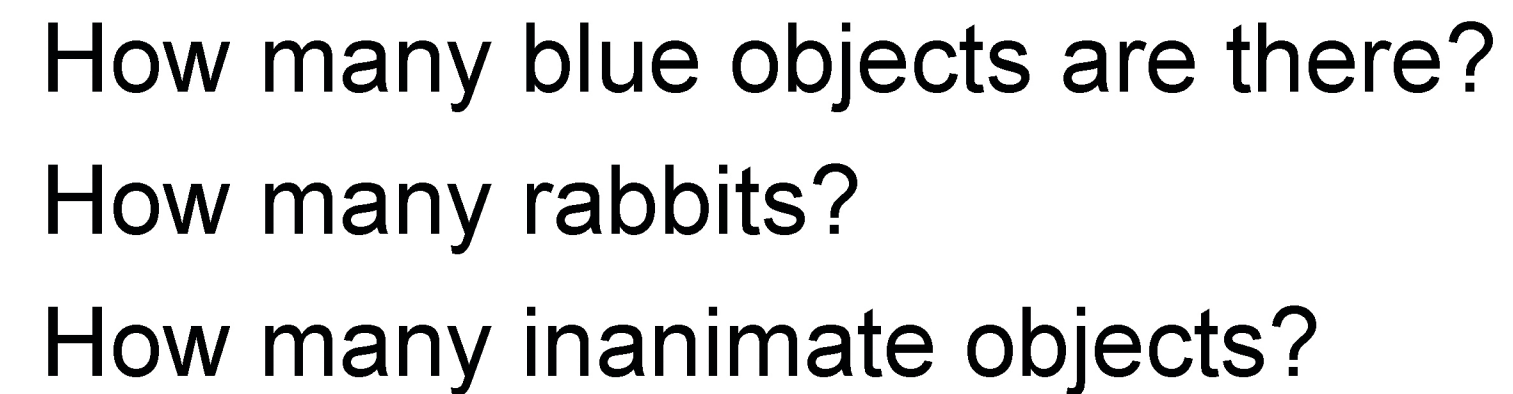How many rabbits?

How many inanimate objects?

Right

How many vertical lines are there?

Explanation

You'll notice that it's easy to find all the blue objects (3), harder to find all the rabbits (2), and actually effortful to find all the inanimate objects (6).

If you said there was only 1 vertical line, look closer!

When trying to find something, you use your *visual working memory* to store a "template" of the target, then use your *attention* to match that template to what you're looking at

My Research

Just like you can search for things you're seeing, you can also remember something first, then search your memory for it afterwards. When you do this, somethign strange occurs:
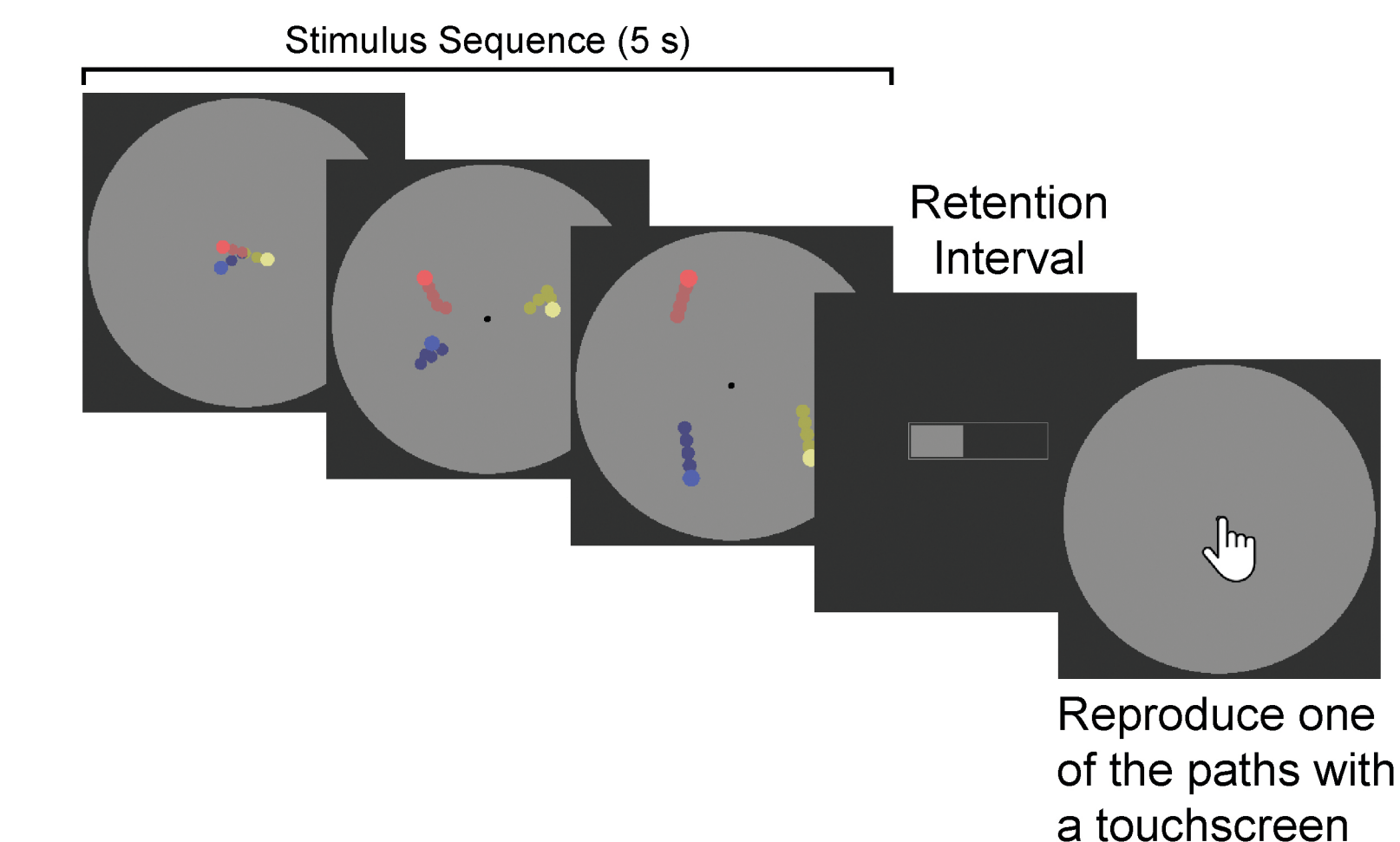
Searching your memory for a primary feature (e.g., RED) is easy. Searching for the secondary feature (e.g., SQUARE) is just as difficult as searching for a conjunction (e.g., RED SQUARE)

A feature or conjunction is cued via a word label.

Participants memorised displays with 3 or 5, two-feature objects

Participants respond whether cued item is left or right of centre

Understanding how attention works is limited by our understanding of visual working memory. To understand visual working memory, we need better ways to measure it.

Old Method of Measurement

Remember

Retention Interval

Same or Different?
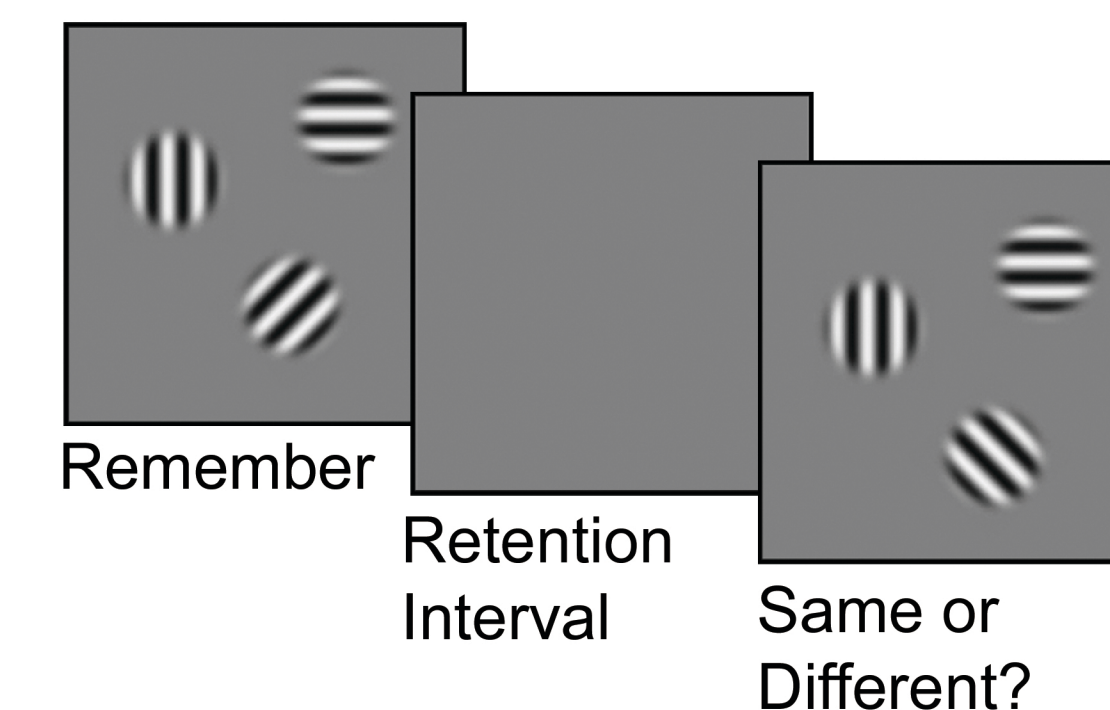
New Method in Development

Stimulus Sequence (5 s)

Retention Interval

Reproduce one of the paths with a touchscreen

The combination of a dynamic moving stimulus and the touchscreen collecting hundreds of data points allows for a more powerful, efficient and accurate measurement of visual working memory.

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