

# Our cheatin' brain: The brain's clever way of showing us the world as a whole

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Whether we choose to admit it or not, we all experience memory errors from time to time. Research has suggested that false memory may be a result of having too many other things to remember or perhaps if too much time has passed. However, previous studies have indicated that a specific type of false memory known as "boundary extension" occurs for different reasons. Boundary extension is a mistake that we often make when recalling a view of a scene—we will insist that the boundaries of an image stretched out farther than what we actually saw.

Although this error is very common and occurs in people of all ages (from young children to the elderly), few studies have been done examining how quickly boundary extension occurs. That is, it was unknown how long a scene needs to be interrupted before the viewer experiences boundary extension and is convinced they saw more than they actually did.

Psychologists Helene Intraub and Christopher A. Dickinson from the University of Delaware were interested in this effect and wanted to test how quickly boundary extension can occur in a group of volunteers. The researchers created two versions of a photograph- the photographs depicted the same scene but one had a wider view, showing more of the background.

In the first experiment, volunteers were shown one view, interrupted very briefly by a "mask" (an unrelated display of lines and curves with a small "happy face" in the center) followed by the same photograph or

the other version of the photograph, which remained on the screen. Volunteers were then asked to report whether the picture they were looking at was the same, or showed more or less of the view compared to the first photograph. The second experiment had a similar set up except that the first and second photographs were shown on opposite sides of the monitor forcing the volunteers to shift their eyes from one image to the other so that the interruption included an eye movement.

The results, reported in the October issue of *Psychological Science*, a journal of the Association for Psychological Science, showed that boundary extension occurred in both experiments—although the volunteers knew exactly what would be tested and their view of the scene was disrupted for as little as 42 milliseconds, when the view was identical, they rated the second photograph as being "closer up" compared to the first. They were positive that they saw more of the scene in the first photograph, even when the interruption lasted quicker than an eye blink! The results of the second experiment (requiring an eye movement) indicate that boundary extension also occurs during visual scanning and not just during more simple tasks that use a mask alone (as in Experiment 1).

Based on these results, the authors suggest a new concept of scene perception, one that is not based solely on visual input. Rather, they suggest that other inputs are also involved, including amodal perception (the ability of the brain to automatically "fill in" blank spaces for us) and spatial perception (providing the viewer with a sense of space beyond the image). Therefore in this study, during the interruption, although the visual input was missing the other inputs were still available, giving the volunteers a general sense of what they saw.

The researchers suggest that errors in boundary judgment may actually be beneficial because the end goal is a logical view of the world as a whole. The authors conclude, "The rapidity of this error would be

advantageous rather than harmful, because the goal of the visual system is not to represent the spurious boundaries of each fleeting view, but to incorporate those views into a coherent, continuous representation of a surrounding world."

Source: Association for Psychological Science

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