Change blindness in the absence of a visual disruption

Question

What was the broad question being asked by this research project?
- How do we detect changes in the environment?

What was the specific question being asked by this research project?
- Can change blindness occur in the absence of a visual disruption?

Alternatives

What was the author's hypothesis?
- **H1:** Change blindness will *only* occur when there is a visual disruption to distract your attention away from motion cues (transient changes).

What were the alternative hypotheses?
- **H2:** Change blindness could also occur when the "change signal" is very weak.

Logic

What was the logic of the hypotheses?
If the author's hypothesis is true, what should happen?

- *If H1, then* people should detect gradual changes (weak change signal) in the environment when there is no visual disruption.
- *If H2, then* people should fail to detect gradual changes (weak change signal) in the environment even when there is no visual disruption.

Methods

What were the methods?

Participants were shown images of scenes and were required to indicate where in the image a change had occurred.

There were three conditions. In the "gradual" condition, the images changed gradually over

the course of trial. In the "disruption" condition, the first image was shown for 11.25 seconds, followed by a blank grey screen (250 ms), followed by the second image. Finally, in the "guessing" condition, participants were shown one of the two images and asked to guess where they thought the change would have been; This was simply a control condition to determine whether people guess the changes without noticing them.

In both experiments, participants viewed images of natural scenes. In the first experiment, the changes included an object appearing or disappearing from the scene, and in the second experiment, an object would change colors.

They used colors in the second experiment because gradually adding/removing an object in the scene would mean that at some point the object is partially transparent. This partially transparent object is anomalous and may differentially improve change detection.

Results

What were the important results?

In experiment 1, they found no difference between participant's ability to detect changes in the disruption and gradual change conditions. Participant's failed to notice changes in ~35-45% of trials.

In experiment 2, they found that participants failed to notice changes more often in the gradual change condition (~70% of trials) as compared to the disruption trials (~60% of trials).

Inferences

What inferences about the hypotheses and questions can be made based on the results?

Summary: The results of the experiment are consistent with the second hypothesis: change blindness can also occur when the change signal is weak and does not necessarily require a visual disruption. These results suggest that you do not need to be "distracted" away from the change to fail to detect them. In order to detect changes, we might be heavily reliant on strong change signals (like sudden motion cues). When we weaken them, by changing the scene gradually, we can fail to notice even large changes in the scene.