Do Threat Images Attenuate Change Blindness?

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Introduction

Inattentional Blindness (Mack & Rock, 1998), the Attentional Blink (Shapiro, 1994) and Change Blindness (Rensink, O'Regan, & Clark, 1997) are all taken as evidence that there is no conscious, visual perception in the absence of focused attention. However, there are some stimuli that have been shown to capture attention even under conditions of inattention, such as one's own name, or a happy face icon. Such stimuli most likely have this unique ability to capture attention, because of their salience, and perhaps to some extent, familiarity. Ro, Russell, and Lavie (2001) found that photographs of human faces also appear to capture our attention by showing that they attenuate Change Blindness in a flicker paradigm. More recently, research by

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Öhman and Mineka (2003) has suggested that snakes may also be special in their ability to capture attention, mainly due to their evolutionary heritage as a threat stimulus.

Question
Will Change Blindness be attenuated for snakes and nother threat stimulus (weapons) that do not have a long evolutionary history.

Prediction
Reaction Times will be faster and Error Rates will be lower for detecting changes in snake images than for detecting changes in neutral or weapon images.
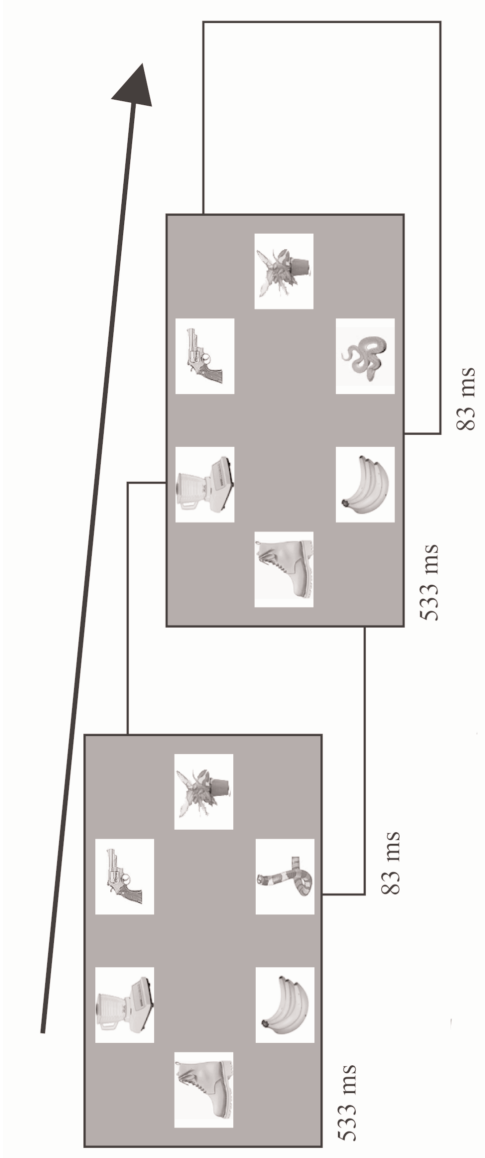
Study 1
(One Oscillation)

- Participants: 24

- Number of Trials: 108. 2/3 change trials & 1/3 no change trials.

- Stimulus Categories: Snakes, Weapons, Appliances, Clothes, Food, & Plants.

- Images: 36 (6 per category)

- Images per Display: 6

Each display contained 6 images, one image per category. On 2/3 of the trials (72), one of the 6 images changed from the initial to subsequent display. On 1/3 of the trials (36), none of the images changed. Displays continued to alternate until the subject detected whether a change had/had not occurred or until 20 s had elapsed.
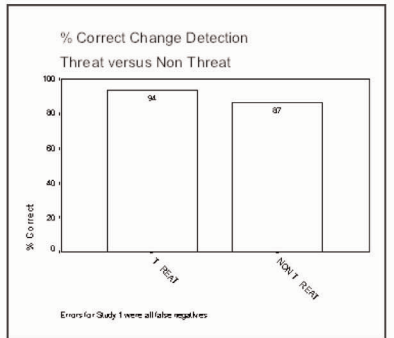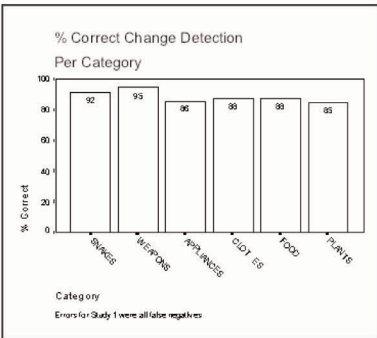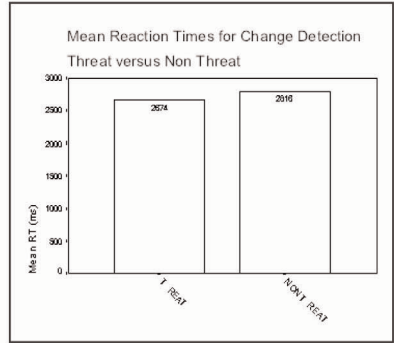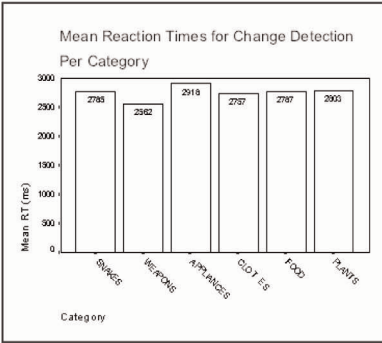
Study 1
Task: Press the spacebar as soon as you have either detected a change or decided that no change has occurred. When you press the spacebar, please verbally report to the experimenter, which, if any, of the six categories has changed.

533 ms

83 ms

533 ms

83 ms

Results (Study 1)

Snake and weapon changes were reported significantly more often than changes to neutral images ($p < .05$). However, contrary to the prediction, RTs for detecting changes for snakes were not faster than for neutral images ($p > .05$), while RTs for weapons were significantly faster ($p < .05$).

Study 2 (Control Study)
(One Oscillation)

Was the failure to find a RT advantage for snake changes due to the fact that snake images were more visually similar to eachother than the stimuli in other categories?

- Participants: 12

- Number of Trials: 108. 2/3 change trials & 1/3 no change trials.

- Stimulus Categories: Snakes, Weapons, Appliances, Clothes, Food, & Plants.

- Images: 36 (6 per category)

- Images per display: 1

Stimuli were presented one at a time. Subjects judged whether the second stimulus was the same as the first. Only stimuli within categories were compared. On 2/3 of the trials (72), one of the images changed to another image within the same category. On 1/3 of the trials (36) the image did not change. Display times were reduced to 100 ms since the task was made easier by presenting only one image per display.

Study 2
Task: Press the spacebar as soon as you have either detected a change or decided that no change has occurred. When you press the spacebar, please verbally report to the experimenter whether or not a change has occurred.

100 ms

83 ms

100 ms

83 ms
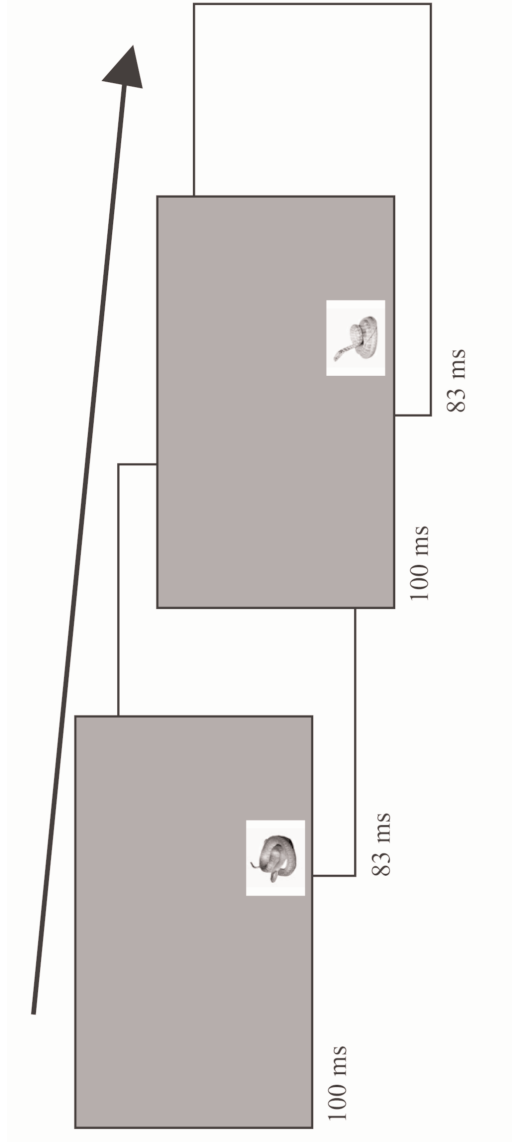
Results (Study 2)

RTs were significantly slower for snakes than for non-threatening images ($p < .05$). RTs were also significantly slower for snakes than for weapons ($p < .05$). Subjects were slightly more likely to miss or falsely identify a snake change than a weapon change ($p = .05$). These results suggest that the snake images were more visually similar to one another than images within the other categories. This may account for the failure to find a RT advantage for snakes in Study 1.
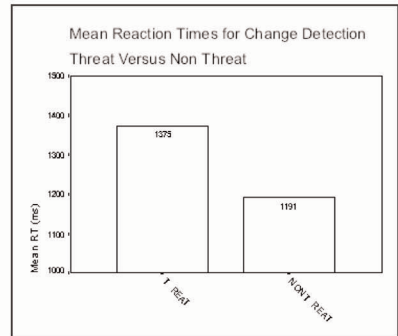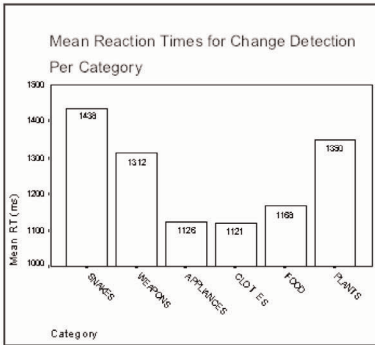
Conclusion

Results indicate that weapons attenuate CB and suggest that this may also be true of snakes. It appears that imaged threat objects have a special capacity to capture attention, which may not be entirely dependent on whether such objects are of evolutionary significance. This is consistent with past research demonstrating that weapons have a unique ability to capture attention (Loftus, Loftus, & Messo, 1987 and see Steblay, 1992 for a more extensive review).

References

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