

Capturing Mechanisms of Visual Attention: Testing contingency hypothesis, salience hypothesis and object-file hypothesis with pop-up stimuli

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Abstract

On issues relating to capturing mechanisms of visual attention, three competing hypotheses have been proposed. “Contingency hypothesis” claims that stimuli will not capture attention unless they match observer’s current attentional control settings. “Salience hypothesis” claims that most salient stimuli will always capture attention whatever the observer’s attentional control settings are. “Object-file hypothesis” claims that stimuli relating to opening a new object file will reveal more capturing effect than those just relating to modifying old files. To test these hypotheses jointly, the authors combined methods of generating binocular rivalry and non-onset stimuli to invent a new kind of stimuli which can change in depth and size and seem to pop-up toward the observer. In experiments 1 and 3, capturing effects of pop-up, onset and bright stimuli were checked by manipulating locational correspondence between the singleton and the target. In experiments 2 and 4, reciprocal interference between pop-up and onset stimuli were revealed, but there was only one-way interference of bright stimuli to pop-up stimuli. In conclusion, most of the results supported the salience hypothesis but the authors also suggested some refining details about it.

Keywords : attentional capture, pop-up stimulus, contingency, salience, object-file

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