Temporal characteristics of the collinear masking effect in visual search

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A target at a salient location is usually easier to find in visual search. However, our previous work reported an interesting phenomenon that a target at a salient location was more difficult to identify compare to that in the background. This phenomenon is called collinear masking effect for it was observed only when the salient location was created by several bars collinear to each other. The goal of this study was to further explore the time course of the collinear masking effect. In Experiment 1 the search display was presented for 40, 70, 150, or 300 ms. Results showed that brief presentation of the search display is enough to elicit the collinear masking effect. Experiment 2 reduced task difficulty and still the collinear masking effect was found for all presentation durations. Experiment 3 presented the search display and the target onset after a delay of 40, 70, 150, or 300 ms. Results showed that the collinear masking effect was reduced but still significant at all durations. We therefore concluded that the collinear masking effect can be generated within 40 ms of the presentation of the search display, and persist at least 300 ms.