# Interactive Effects of Hand-Proximity and Emotion on Vision

Blaire J. Weidler & Richard A. Abrams

## Introduction

- Many changes in vision have been reported when evaluating stimuli near the hands (e.g., slower rates of search\(^1\), improved visual short term memory\(^2\), impaired semantic processing\(^3\), biased figure-ground assignment\(^4\))
- Some visual changes suggest an enhanced role of magnocellular processing (temporal sensitivity is improved near the hands while spatial sensitivity is impaired\(^5\))
- In these experiments we further explored the possibility that proximity to the hands leads to enhanced processing by magnocellular mechanisms.

## Experiment 1

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sensitivity (A Prim)</th>
<th>Spatial Frequency (cpd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hands Near</td>
<td>0.83</td>
<td>2.1</td>
</tr>
<tr>
<td>Hands Far</td>
<td>0.85</td>
<td>2.1</td>
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Hand proximity and SF interacted against a grey background. Having hands near the stimuli increased LSF sensitivity.

The effect of hand proximity was eliminated against a red background.

These results support the idea that magnocellular processing is enhanced for stimuli near the hands.

## Experiment 2

<table>
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The typical finding of slower search rates for stimuli near the hands was replicated against a green background.

## Experiment 3

- Do hand-proximity and fearful stimuli exert their effects through a shared mechanism?
  - Exposure to fearful stimuli and nearby hands both increase sensitivity to LSF stimuli\(^6\).
  - The amygdala, which responds to emotional stimuli, receives primarily magnocellular input\(^6\).
  - Objects near the hands might be dangerous – enhanced processing could be beneficial.

- The effects of emotion and hand proximity interacted.
  - With hands nearby, benefit of fearful stimuli extended to neutral stimuli.

- Further support that magnocellular processing is enhanced for stimuli near the hands:
  - Increased LSF sensitivity
  - When magnocellular processing suppressed, no evidence for LSF sensitivity or slower search rates

- First direct evidence that hand nearness and processing of emotional stimuli interact – may operate through common mechanism.

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