Effects of Temporal Frequency on Binocularity in Amblyopia
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### Amblyopic Deficits

Amblyopes exhibit binocular visual deficits, including interocular suppression and impaired stereopsis\(^1\).

![Diagram showing binocular rivalry and stereopsis](image)

**Binocular Rivalry**
- Left Eye
- Right Eye

**Stereopsis**
- Amblyopic Eye
- Normal Sensory Balance

In normally-sighted subjects, temporal frequency can modulate binocular interactions (for example, in stereopsis\(^2\) and continuous flash suppression\(^3,4\)).

#### How does flicker influence binocular interactions in amblyopes?

**Interocular suppression and stereoacuity measured across spatial frequency and temporal frequency**

6 adult amblyopes: BCVA > 0.10 logMAR in amblyopic eye and interocular difference ≥ 0.20 logMAR
14 normally-sighted controls: 0.00 logMAR or better in each eye

- **Normal Sensory Balance**
- **Binocular Imbalance**

### Results: Interocular Suppression

**Dichoptic Letter Chart\(^5\)**
- For each dichoptic letter pair, report the dominant percept

<table>
<thead>
<tr>
<th>Left Eye</th>
<th>Right Eye</th>
</tr>
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<tbody>
<tr>
<td>A</td>
<td>B</td>
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<tr>
<td>B</td>
<td>A</td>
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</tbody>
</table>

**Differential effect of spatial frequency on suppression (amblyopes compared to controls; F=2.9, p = 0.04) and spatial frequency (larger increase for amblyopes than for controls; F=9.49, p < 0.001)***

- **Modulation of interocular suppression by temporal frequency**
  - Control Subj.
  - Amb. Subj.

### Results: Stereopsis

**Differential effect of spatial frequency on stereoacuity (for amblyopes compared to controls; F=5.71, p = 0.007)***

- **Control Subj.**
- **Amb. Subj.**

**CONCLUSIONS**

- Amblyopes show skewed interocular contrast balance points and elevated stereoacuity thresholds.
- Effects of temporal frequency may depend on the type of binocular interaction: flicker modulates interocular suppression, but not stereopsis.