

# Stability of Spatial Selective Attention Among 7-month-old Infants

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## Introduction

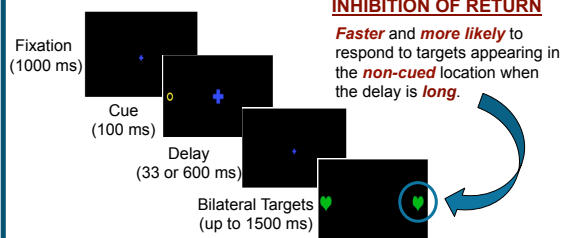
Selective attention has an important role in determining input to cognitive and perceptual systems and allows infants to organize information into coherent units. Deployment of selective attention often occurs without explicit control or instruction. For example, salient peripheral cues initiate attention shifts across spatial locations. Under certain conditions, responses to the cued location are inhibited while responses to the opposite location are facilitated, an effect known as inhibition of return (IOR). This sensitivity to salient cues may have important implications for early development. However, not all infants show the IOR attention effect, even after the age (~6-months) when it is reliably elicited from most infants. This variability may be due to a lack of individual stability in attention processing. Alternatively, this variability may reflect individual differences that are consistent across situations. The present study examined the stability of the IOR attention effect across three test sessions, as well as the relationship between this attention effect and individual differences in temperament and daily behavior.

## Participants

|           | Valid N (Missing) | Mean Age (Months, Days) | Age Range (Months, Days) | Mean # Days Between Sessions | Range - # Days Between Sessions |
|-----------|-------------------|-------------------------|--------------------------|------------------------------|---------------------------------|
| Session 1 | 65 (9)            | 7, 1                    | 6, 22 - 7, 9 (16 days)   | n/a                          | n/a                             |
| Session 2 | 66 (8)            | 7, 11*                  | 7, 0 - 7, 23 (23 days)   | 10.04*                       | 6 – 22                          |
| Session 3 | 65 (9)            | 7, 21*                  | 7, 7 = 8, 7 (30 days)    | 10.01*                       | 3 – 31                          |

\*Age at S2 & S3 and Days Between Sessions are correlated with S1 IOR effects only.

## Spatial Cueing Task



## Measures

**Inhibition of Return (Delay = 600 ms):**

**Orienting:** Proportion of trials in which the first look after target onset is to the opposite, non-cued location (chance = 0.5)

**Reaction Time:** Average latency to look at targets in opposite location, subtracted from average latency to look at targets in cued location.

**Difference Score = 0** – no RT benefit for targets in cued or opposite locations.

**Difference Score > 0** – RT benefit for targets in opposite location (IOR effect).

**Temperament:** Infant Behavior Questionnaire (IBQ-R); (Gartstein & Rothbart, 2003)

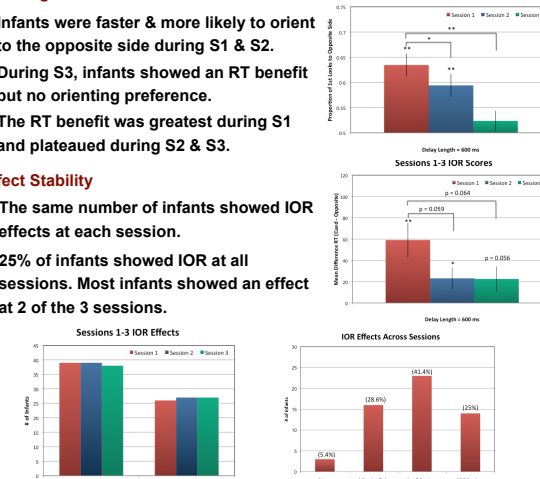
## Overall Results

### Orienting & Reaction Time

- Infants were faster & more likely to orient to the opposite side during S1 & S2.
- During S3, infants showed an RT benefit but no orienting preference.
- The RT benefit was greatest during S1 and plateaued during S2 & S3.

### Effect Stability

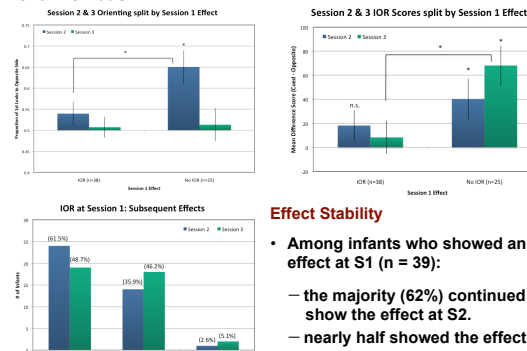
- The same number of infants showed IOR effects at each session.
- 25% of infants showed IOR at all sessions. Most infants showed an effect at 2 of the 3 sessions.



## Session 1 – Session 2 & 3

### Orienting & Reaction Time

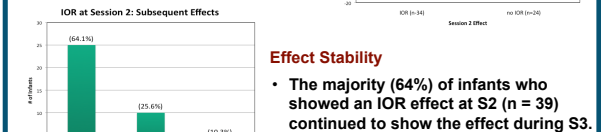
- During S2, only infants who did not show an S1 IOR effect preferentially oriented to the non-cued location.
- During both S2 & S3 the RT benefit was limited to Infants who did not show IOR at S1.



## Session 2 – Session 3

### Orienting Reaction Time

- During S3, infants who did show an S2 IOR effect showed an RT benefit at the non-cued location.
- Neither group showed an orienting preference during S3.



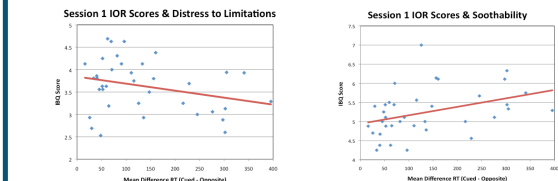
### Effect Stability

- The majority (64%) of infants who showed an IOR effect at S2 (n = 39) continued to show the effect during S3.

## Session 1 IOR & Temperament

### Distress to Limitations, & Soothability (IBQ)

- Infants who show more distress to limitations had lower IOR scores.
- Infants who are more active and more easily soothed by caregivers had higher IOR scores.



## Discussion & Future Directions

- As a group, infants showed the IOR effect across all three test sessions.
- However, only 25% of individual infants demonstrated IOR at every session.
- Performance during sessions 2 & 3 appears to be most closely linked:
  - Infants who did not show IOR at session 1 showed strong IOR effects during sessions 2 & 3.
  - Infants who did show IOR at session 2 also showed IOR at session 3.
- We plan to use growth curve analyses to identify patterns of stability for individual infants.
- The relationship between infants' IOR scores and "soothability" & "distress to limitations" scores supports neurocognitive models that integrate early attention and self-regulation.

### Acknowledgments

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