## Perception of Facial Emotions of Varying Intensities in 3-Year-Olds

### Behavioral materials and methods

**Participants**
- N=208 3-year-olds, 56 of whom also contributed valid fNIRS data

**Paradigm**
- Children sorted neutral and happy, angry, and fearful faces of varying intensity into four houses representing these emotions (6)
- The task required an overt, explicit response but not verbal labelling

### fNIRS Regions Of Interest

- Superior Temporal Gyrus (STG)
- Middle Frontal Gyrus (MFG)
- Inferior Frontal Gyrus (IFG)

### Conclusions

- Increased sensitivity to happy expressions in this age group is reflected in behavioral and neuroimaging results

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- The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institute of Mental Health of the National Institutes of Health.
- The task required an overt, explicit response but not verbal labelling

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**References:**
1. Leppanen & Nelson, 2009
2. Sanchez, Richards, & Almali 2011
4. Lloyd-Fox et al. 2014
5. Perdue et al., under review
6. Filmore et al. 2015
7. Behrendt et al 2018
8. Harris et al. 2009
10. Perdue et al., under review

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**Behavioral results**

**Behavioral accuracy**

**Responses to neutral faces**

**Fitted psychometric curves**

**Average channel locations and sensitivity profile**

**fNIRS Regions Of Interest**

- Superior Temporal Gyrus (STG)
- Middle Frontal Gyrus (MFG)
- Inferior Frontal Gyrus (IFG)

**Average similarity matrix (all ROIs)**

**Activations versus Baseline**
- Significant activations in response to Happy (100%) and/or Fear (40%) versus baseline over the left MTG, bilateral STG, and left TPJ

**Differential responses versus Neutral**
- Significant difference in response to Happy (100%) versus Neutral over the left IFG

**Brain-behavior relationships**
- No significant effect of mean behavioral accuracy on activation in any ROI after FDR correction, controlling for number of trials

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