



MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2024-2025

(internship from January to June 2025)

Host laboratory: Institut des Sciences Cognitives, UMR 5229 CNRS/UCBL, 67 Bd Pinel, 69675 Bron, France (<http://isc.cnrs.fr>)

Host team : : Decision, Action, and Neural Computation (DANC) team
(<https://www.danclab.com/>)

Internship supervisors :

James Bonaiuto, Chargé de recherche
University / Institution: CNRS/ University Lyon 1
E-mail address : james.bonaiuto@isc.cnrs.fr

Holly Rayson, Postdoctoral researcher
University / Institution: CNRS/ University Lyon 1
E-mail address : holly.rayson@isc.cnrs.fr

Project title : Effects of early social experience on the development of affect-biased attention

Project summary :

Attention mechanisms enable the brain to manage competing demands in the everyday environment by prioritizing a subset of stimuli for dedicated processing. *Affect-biased* attention is posited to play a broad and pervasive role in early socioemotional development, with emerging gaze biases (e.g. to specific facial expressions) shaping an infant's experience of their environment. However, specific affect-biases have also been linked to poor socioemotional functioning later on in development such as risk for anxiety, and many questions remain about the neural and psychological mechanisms through which affect-biased attention arises and may relate to both typical and pathological outcomes. The internship will be part of a larger project examining the longitudinal relationship between infant affect-biased attention and brain development across the first year of life, as well as how early social experience may influence this relationship. The project involves longitudinally assessing infants using MRI/DTI, eye-tracking, and behavioral observation. The internship project will include helping to collect data from 3, 6, and 12 month old infants, and analyzing eye-tracking data and video recordings of mother-infant interactions.

3-5 recent publications :

Rayson H, Debnath R, Alavizadeh S, Fox N, Ferrari PF, Bonaiuto JJ. (2022) Detection and analysis of cortical beta bursts in developmental EEG data, *Developmental Cognitive Neuroscience*, 54: 101069.

Rayson, H., Massera, A., Belluardo, M., Ben Hamed, S., & Ferrari, P.F. (2021). Early social adversity modulates the relationship between attention biases and socioemotional behaviour in juvenile macaques. *Scientific Reports*, 1(1), 1-11.

Dodd, H. F., Rayson, H., Ryan, Z., Bishop, C., Parsons, S., & Stuijzand, B. (2020). Trajectories of anxiety when children start school: The role of behavioral inhibition and attention bias to angry and happy faces. *Journal of Abnormal Psychology*, 129(7), 701.

Rayson H, Bonaiuto JJ, Ferrari PF, Chakrabarti B, Murray L (2019) Building blocks of joint attention: Sensitivity to having one's own gaze followed in early infancy. *Developmental Cognitive Neuroscience*, 37: 100631.

Rayson H, Bonaiuto JJ, Ferrari PF, Murray L (2017) Early maternal mirroring predicts infant motor system activation during facial expression observation. *Scientific Reports*, 7: 11738.