Annotated Bibliography

Elsabbagh, M., & Johnson, M. H. (2016). Autism and the Social Brain: The First-Year Puzzle. *Biological Psychiatry*, *80*(2), 94–99. https://doi.org/10.1016/j.biopsych.2016.02.019

This article delves into the early developmental indicators for Autism Spectrum Disorder. The authors go against the idea that Autism is solely rooted in social cognition abnormalities and present evidence that there are deeper neurodevelopmental differences present. These neurodevelopmental differences can appear in perception, attention, and physical action, among other areas. Further, these neurological differences often precede social deficits, which can be vital to early diagnosis and intervention for Autistic individuals. This research is incredibly relevant to our study, as the evidence presented highlights that these neurocognitive differences typically appear from a very young age. It supports the ideas in our research that there are underlying mechanisms related to interpreting sensory input that may appear different in children with Autism.

Guy, M. W., Richards, J. E., Tonnsen, B. L., & Roberts, J. E. (2018). Neural correlates of face processing in etiologically-distinct 12-month-old infants at high-risk of autism spectrum disorder. *Developmental Cognitive Neuroscience*, *29*, 61–71. https://doi.org/10.1016/j.dcn.2017.03.002

This study explores the neural correlates of face and non-face stimuli on infants with siblings with autism (ASIBs), infants with fragile X syndrome (FXS), and infants who are at low risk (LR). The experiment involved placing EEGs on infants and presenting them with familiar faces, novel faces, familiar toys, and novel toys. The findings showed that all infants displayed a higher response rate to the N290 component, which is the brain response to faces. At the Nc component, which correlates to brain responses to familiarity, LR infants displayed a higher response rate to novel stimuli than to their mother's faces and their own toys. FXS displayed the opposite response rates to LR, and ASIBs did not differ in the way they responded to the stimuli. This research article to relevant to our study because it compares neurotypical and high-risk infants, ASIBs. However, another group that was added was the FXS, which can provide more insight into how infants with developmental disorders can process social and nonsocial stimuli.

Conte, S., Richards, J. E., Guy, M. W., Xie, W., & Roberts, J. E. (2020). Face-sensitive brain responses in the first year of life. *NeuroImage*, *211*, 116602. https://doi.org/10.1016/j.neuroimage.2020.116602

This article examines the sensitivity to face processing throughout infancy and compares it to object processing. This was a cross-sectional study where they studied infants at 4.5 months until 12 months. The ERP components that were looked at where N290, which primarily plays a role in processing faces, as well as P1, P400, and Nc. It was found that there was a larger response at the N290 and P1 component to faces than objects, and this seemed to increase with age. There was no difference in face processing and object processing at the P400 component. Lastly, the Nc component differentiation was influenced by infants attentiveness to each of the stimuli. This article closely relates to our study because we are doing a similar procedure and presenting social and nonsocial stimuli. It provides us more information about each ERP component so that we can further interpret EEG data.

Guy, M. W., Zieber, N., & Richards, J. E. (2016). The Cortical Development of Specialized Face Processing in Infancy. Child development, 87(5), 1581–1600. https://doi.org/10.1111/cdev.12543

This study examines the development of specialized face processing in infants aged 4.5-7.5 months, focusing on ERP components N290, P400, and Nc. The researchers presented images of both faces and toys and found that ERP responses were greater for face-sensitive activity at N290, while response amplitude for toy-sensitive activity was more prevalent at the P400 marker. This processing was primarily localized in the middle fusiform gyrus (in the occipital-temporal brain area). They also found that the Nc was greater during attention than inattention. This study focuses in on normative development of face processing during infancy, which can be valuable to our research as a baseline for our neurotypical participants. Specifically, it directs us to areas of the brain that are of value in our research and the ERP components to zoom in on.

Reynolds, G. D., & Guy, M. W. (2012). Brain-behavior relations in infancy: integrative approaches to examining infant looking behavior and event-related potentials. Developmental neuropsychology, 37(3), 210–225. https://doi.org/10.1080/87565641.2011.629703

In this article, the authors reflect on three research approaches to studying brain–behavior relations in infancy. The first approach is conducting a study with both behavioral and ERP measures in separate experiments to allow for comparison. The second approach is to measure behavior and ERPs in different phases of the same experiment, and the third option is to measure both the behavioral component and the ERPs at the same time. There are specific bonuses and limitations to each of these approaches and while one was not selected as “better” than the others, the authors emphasize the importance of having this combined data on the behavioral end and the neuropsychological end to allow for a more accurate and holistic view of the research being done. Regarding our research, this is important because subtle differences in infant processing between neurotypical and infants with ASD may not be noticeable in just ERP or behavioral data alone; therefore, having both could allow researchers to catch data they may have otherwise overlooked.