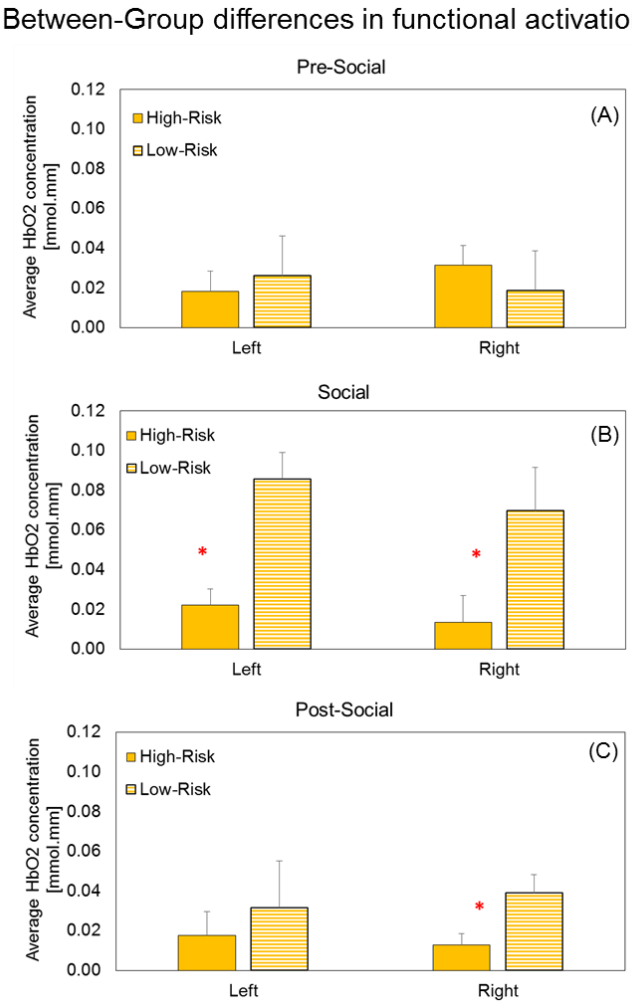
Supplementary Materials

A. Comparing functional activation between pre-social, 1st 30 seconds of social, and the post-social period.

The pre- and post-social periods were of 30-second duration whereas the social period was 300 seconds long. This analysis was done to compare equal durations of the three stimulation periods: pre-social, social (i.e., 1st 30-seconds), and post-social. In terms of between-group differences, the independent t-tests show similar results to that reported in the body of the manuscript (compare Figure 4A-4C and Figure S1A-S1C shown below). During the social and post-social periods, the HR infants had reduced FA compared to the LR infants. This pattern was even stronger in that both left and right hemispheres showed this pattern. The post-social period's group differences were noted on the right side only.

Figure S1: Group differences in functional activation (left, right) across periods – A) Pre-social, B) Social, and C) Post-social. Red asterisks indicate significant group differences.



B. **Additional FC analyses using both negative and positive correlations**

We conducted FC analysis using both positive and negative correlations were included in this analysis.

In terms of within-group differences, paired t-tests revealed a U-shaped trajectory in HR infants with hyperconnectivity during the pre- and post-social periods and a significant drop in connectivity during the social period (Figure S2A-S2B). In addition, LR infants showed variable patterns of connectivity (Figure S2A-S2B).

Compare Figure 6A-6B from the manuscript and S2A-S2B shown below and you will notice that the within-group trends are fairly similar.

In terms of between-group differences, the HR infants had greater connectivity than the LR infants during the pre-social and post-social periods (Figure S3A-S3C). Interestingly, our results are slightly stronger in that during the social period we found significantly greater connectivity in the LR infants compared to the HR infants (Figure S3B). Compare 7A-7C shown in the manuscript and S3A-S3C shown below to note similarities in between-group differences. Overall, both the within- and between-group trends are very similar to the results discussed in the body of the manuscript.

Figure S2A-S2B: Context-related differences in functional connectivity for HR infants (A) and LR infants (B). Red asterisks indicate significant between-condition differences.

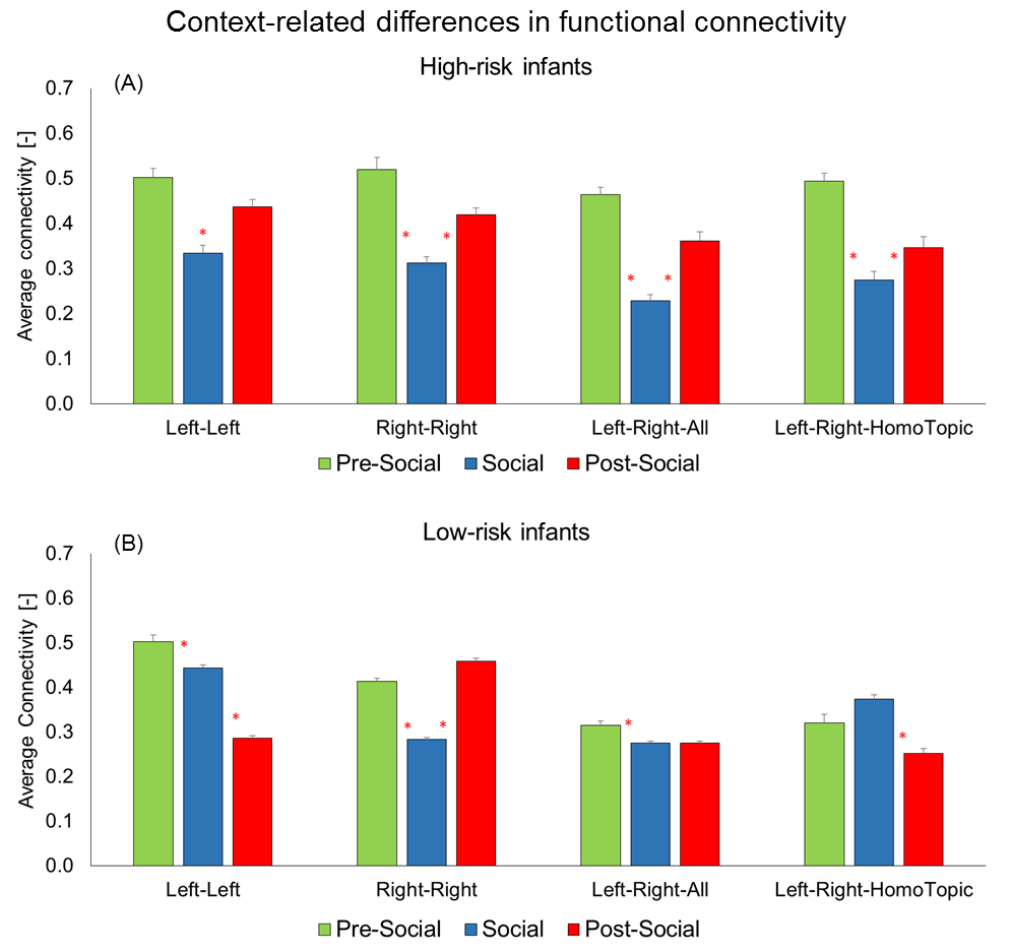
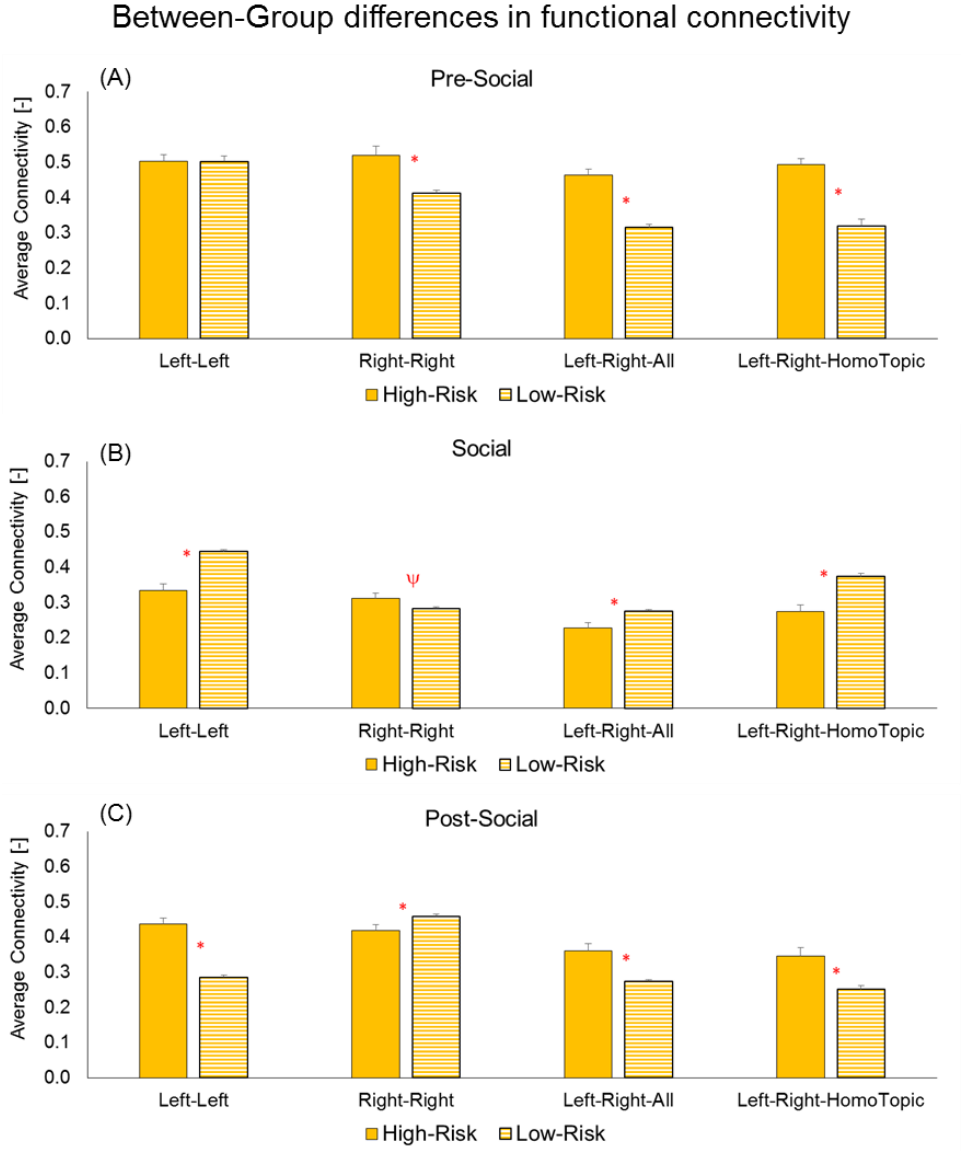


Figure S3A-S3C: Group differences in functional connectivity for three periods: A) Pre-social, B) Social, and C) Post-social. X-axis lists the different types of FC - left intra-hemispheric, right intra-hemispheric, inter-hemispheric for all channels, and inter-hemispheric for homotopic channels only. Red asterisk (*) indicates significant group differences (*p*-values ranging from 0.001 to 0.0001) and red psi (ψ) indicates a trend (*p*-values from 0.05 to 0.1).


Between-Group differences in functional connectivity
(A)
Pre-Social
Average Connectivity [-]
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Left-Left
Right-Right
Left-Right-All
Left-Right-HomoTopic
High-Risk
Low-Risk
(B)
Social
Average Connectivity [-]
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Left-Left
Right-Right
Left-Right-All
Left-Right-HomoTopic
High-Risk
Low-Risk
(C)
Post-Social
Average Connectivity [-]
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Left-Left
Right-Right
Left-Right-All
Left-Right-HomoTopic
High-Risk
Low-Risk