Title: Parent-Child Engagement Predicts Later Social Symptomatology in Infants at High Risk for Autism Spectrum Disorder

Authors: Sweeya Raj¹, Jacob Feldman¹, Ashley Augustine², Sarah Bowman², Claire Daly¹, Kacie Dunham¹,³, Varsha Garla¹, Alexandra Golden², Aine Muhumuza¹, Pooja Santapuram¹, Evan Suzman¹, Shannon Crowley⁴, So Yoon Kim⁴, Kristen Bottema-Beutel⁴, Bahar Keceli-Kaysili², & Tiffany Woynaroski²,³,⁵

Introduction: Early in life, caregivers support children’s engagement in joint play routines in a manner that scaffolds development across a number of domains, for both typically developing (TD) children and children with autism spectrum disorder (ASD). Recent work has differentiated between lower order supported joint engagement (LSJE; wherein a caregiver appears to influence a child’s play, but the child does not actively acknowledge the caregiver) and higher-order supported joint engagement (HSJE; wherein a caregiver influences child’s play, and the child acknowledges the caregiver by engaging in reciprocal play). Several studies have found that the latter engagement state – HSJE – may be superior to the former – LSJE – for predicting later development in children with ASD. The present study evaluated the degree to which the aforementioned types of supported joint engagement may be useful for predicting future social symptoms in children with a heightened likelihood of future ASD diagnosis (Sibs-ASD; i.e., infants with an older sibling with ASD) and a control group of infants at relatively lower, general population level likelihood of future ASD diagnosis (Sibs-TD; i.e., infants with typically-developing older sibling/s).

Method: Participants include 40 infants and toddlers (20 Sibs-ASD and 20 Sibs-TD) who entered a longitudinal study at Vanderbilt University Medical Center between the ages of 12 and 18 months. Groups are matched on biological sex and chronological age. At study entry (T1) parent-child engagement was measured in two 15-minute parent child free play (PCFP) sessions. Video files from each PCFP session were coded by an independent coder naïve to infants’ risk status. Scores were aggregated across PCFP samples to derive three indices of entry-level supported joint engagement: time spent in HSJE, LSJE, and Total SJE. Nine months after study entry (T2), participants’ social symptomatology was measured using the Autism Diagnostic Observational Schedule (ADOS-2), as administered by a research-reliable clinician. Social affect index scores were used as the dependent variable in analyses.

Results: Preliminary analyses were conducted on 29 infants and toddlers who have completed T2 data collection to date (12 Sibs-ASD, 17 Sibs-TD). The aforementioned preliminary groups are non-significantly different on biological sex, chronological age, and mental age. Across groups, zero-order correlations between T1 parent-child engagement scores and T2 ADOS social affect scores were not significant (zero-order correlations = –0.19, –0.21, and –0.27 for HSJE, LSJE, and Total SJE). However, two of these associations (i.e., HSJE and Total SJE) were significantly moderated by risk group (p value’s in multiple regression analyses for interaction terms < 0.05). In the Sibs-ASD group, T1 HSJE and Total SJE predicted T2 ADOS social affect scores, with moderate-large effect sizes (zero-order correlations = –0.49; p = 0.05 and –0.54; p = 0.03, respectively). In the Sibs-TD group, these associations were null (zero-order correlations = –0.11 and 0.04 for HSJE and Total SJE, respectively). Table 1 summarizes associations according to risk group.

Discussion: Results suggest that increased early supported engagement, in particular HSJE, predicts reduced social symptom severity in Sibs-ASD. These findings extend prior work demonstrating similar longitudinal relations in preschool-aged children diagnosed with ASD and highlight the importance of parsing out higher- and lower-order supported joint engagement states when considering potential predictors of outcomes in children with or at an increased likelihood for ASD. Future research in our

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¹ Vanderbilt University
² Vanderbilt University Medical Center
³ Vanderbilt Brain Institute
⁴ Boston College
⁵ Vanderbilt Kennedy Center
labs will test whether HSJE mediates the previously observed longitudinal relation between early sensory disruptions and later social symptomatology in this sample.

References:


Table 1

Zero-order Correlations between Time 1 Parent-Child Engagement and Time 2 Social Symptomatology by Risk Group

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Parent Child Engagement Variable</th>
<th>HSJE</th>
<th>LSJE</th>
<th>SJE Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sibs-ASD</td>
<td></td>
<td>−0.49*</td>
<td>−0.35</td>
<td>−0.54*</td>
</tr>
<tr>
<td>Sibs-TD</td>
<td></td>
<td>−0.12</td>
<td>0.19</td>
<td>0.04</td>
</tr>
</tbody>
</table>

Note. HSJE = Higher-order supported joint engagement, LSJE = Lower-order supported joint engagement, Total SJE = Total time spent in supported joint engagement (i.e., sum of HSJE and LSJE). Social symptomatology measured by the social affect scale of the Autism Diagnostic Observational Schedule (ADOS-2).

*p < 0.5