Atypical visual-auditory predictive coding in Autism Spectrum Disorder
van Laarhoven, Thijs; Stekelenburg, Jeroen; Eussen, M.; Vroomen, Jean

Publication date:
2019

Link to publication

Citation for published version (APA):
Atypical Visual-Auditory Predictive Coding in Autism Spectrum Disorder
Electrophysiological Evidence from Stimulus Omissions

**PRESENTER**
Thijs van Laarhoven
t.j.t.m.vanlaarhoven@tilburguniversity.edu

**SUMMARY**

**Autism Spectrum Disorder** (ASD) is a pervasive neurodevelopmental disorder that has been linked to a range of perceptual processing alterations, including hypo- and hyperresponsiveness to sensory stimulation.

Recent evidence suggests that these symptoms might be related to a decreased ability to anticipate upcoming sensory stimulation. The results of this study showed that individuals with ASD may be unable to fully anticipate the sensory consequences of their own motor actions.

This raised the question if the ability to predict the actions of other individuals is altered as well in ASD.

Here, we used a stimulus omission paradigm to examine the electrophysiological markers of prediction error in auditory prediction by vision in individuals with ASD to assess their ability to anticipate the sensory consequences of others’ actions.

Unexpected auditory omissions in a sequence of audiovisual recordings in which the visual motion reliably predicted the timing and content of the sound elicited larger prediction errors in our sample of individuals with ASD.

The current data suggest that individuals with ASD may have impairments in the ability to anticipate the sensory consequences of others’ actions and support the notion that sensory prediction might be overly precise and inflexible in ASD.

---

**RESULTS**

<table>
<thead>
<tr>
<th>Group</th>
<th>Sample size</th>
<th>No. females</th>
<th>Mean age</th>
<th>Mean IQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASD</td>
<td>29</td>
<td>8</td>
<td>18.64</td>
<td>103.03</td>
</tr>
<tr>
<td>Typical Development</td>
<td>29</td>
<td>6</td>
<td>18.93</td>
<td>112.07</td>
</tr>
</tbody>
</table>