

# Seeing emotion: Studies on the processing of facial expressions in normal development and young children with autism

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## Seeing Emotion

**studies on the processing of facial expressions in normal development and young children with autism**

**Petra Vlamings**

1. In children, the early processing of facial expressions (fear versus neutral) is primarily driven by high spatial frequency (HSF) information, whereas adults rely on low spatial frequency (LSF) cues for early facial expression processing.
2. Already at a young age there is a basic abnormality in low-level visual processing in children with Autism Spectrum Disorder (ASS), this abnormality reflects itself in enhanced processing of HSF faces and is present during the perceptual processing of both grating stimuli and faces.
3. Differences in contrast and luminance between HSF and LSF stimuli, which are a consequence of the filtering procedure, do not explain the finding that facial expression processing is driven by LSF information during an early stage of processing in adults.
4. Children with ASS show abnormalities in some aspects of self-monitoring, which is reflected in reduced activation in Anterior Cingulate areas as well as an absence in post-error slowing.
5. To better understand the typical and atypical patterns of facial expression processing presented in this thesis it is important to verify the existence and functionality of a subcortical route for facial expression processing and study its development.
6. If measuring subcortical activity in infants and young children was as easy as acquiring data from the cortical areas, it would be possible to acquire much more knowledge about normal and abnormal social emotional development.
7. Research in Developmental Cognitive Neuroscience not only provides information about the development of brain areas/networks and related functions, it is also important for a better understanding of certain functions and corresponding brain areas/networks in the adult brain.
8. Given the large variability in symptoms seen in the ASS population, future studies should be aimed at identification of relevant subgroups. Investigating the presence of distinct cognitive endophenotypes in ASS might provide important insights into possible links between behaviour, genes and the brain.
9. Different parts of the brain do not act independently. Therefore it is extremely important to study the development of the functionality of different brain areas in relation to each other.
10. A single study often results in more new questions than answered questions, without new questions though, there would be no science.
11. A close collaboration between fundamental scientists, clinical scientists and clinicians is necessary to translate research knowledge into improved patient care.