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Introduction

Background:
• Atypical visual processing, such as enhanced local visual processing or impaired global visual processing, is often reported in individuals with an autism spectrum disorder (ASD)
• Widespread variety of often contradictory research findings

Objectives:
• Test whether the existing empirical data favor a local processing bias or a global processing deficit
• Analyze which possible moderators rule the local vs. global visual processing diversity in ASD

Methods

Literature search:
• Web of Science database (Jan 1983 - July 2013)
• Reference- and citations lists of ten key papers

Requirements:
• English published article
  ▪ Local-global visual processing in ASD
  ▪ Experimental design
  ▪ Behavioral outcome data

Study selection process:

<table>
<thead>
<tr>
<th>Record screened</th>
<th>Full-text assessed</th>
<th>Full-text included</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=1415</td>
<td>N=138</td>
<td>N=56</td>
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Analysis:
• Hedges’ g using CMA; negative indicates disadvantage for ASD
• Three-level random effects model using SAS version 9.3
• Analyzed the (combined) impact of several moderators, e.g.
  • 8 different local-global tasks: HF, VS, BDT, EFT, ROCT, DT, D, CT

Results

Investigation of Publication Bias
• Funnelplot:
  ▪ Mean effect size g as a function of the SE of g
  ▪ Trim and fill method of Duval and Tweedie

Moderator analysis:
• Strong moderator effects for:
  ▪ Level of visual processing
  ▪ Performance measure: RT vs accuracy
• Limited task-dependent effects:
  ▪ Small overall group differences for HF and VS
  ▪ No group differences for BDT, EFT, ROCF, DT, D and CT
• No moderator effects for IQ, age and gender

Conclusions

Summary:
• Intact local visual processing but slow global visual processing in ASD compared to TD
• Interaction effect present between the level of visual processing and the type of performance measure
• Limited task-dependent differences
• Group differences do not vary with age, gender or IQ

Theoretical implications:
• Focus on temporal interplay of local-global visual processing
• Need to address the lack of clear theoretical and empirically founded conceptualizations

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