How do the functions of restricted and repetitive behaviors vary with developmental level in children with ASD?

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Background

Research on the causes of repetitive behaviors is at an early stage, but suggests that (a) They serve a variety of functions for individuals with ASD; and (b) They potentially serve a variety of adaptive functions in typical development, which are likely to change during development. ⁷

Therefore a developmental perspective is likely to be helpful in gaining an understanding of the functions, and thus the causes, of repetitive behaviors in ASD. ¹

An ecologically valid method of investigating the functions of behaviors is to elicit caregivers’ observations of the triggers and effects of those behaviors. The Motivation Assessment Scale (MAS)¹ is a caregiver questionnaire designed to do this.

Joosten et al. (2009) modified the MAS for use in relation to repetitive behaviors in children with ASD, by adding an anxiety subscale. ⁴ The functions addressed by the Revised MAS (MAS-R) are:

- Intrinsic functions
  - Controlling sensory feedback
  - Responding to anxiety
  - Escaping from demands
  - Gaining social attention
  - Gaining tangible reward

- Extrinsic functions

Objectives

To investigate the extent to which the functions of repetitive vary with developmental level in children with ASD.

Method

Participants

- 36 parents participated (all mothers).
- The mean age of the children was 8 years; 8 months (SD 4.9, range 2.1 to 17.9).
- All children had a clinical diagnosis of an ASD, including 31% with core autism, and 14% with Asperger syndrome or high functioning autism.

Procedure

The most frequent repetitive behaviors of each child were identified using their parent’s responses to the Repetitive Behaviours Questionnaire-2 (RBQ-2). ³

Then, as part of a telephone interview, each participant completed one MAS-R for each of their child’s most frequent repetitive behaviors.

Only the results for lower-level repetitive behaviors are included in the present analysis, with lower-level behaviors defined as those relating to the repetitive sensory and motor behaviors subscale of the RBQ-2. ³

Expressive language level was used to index developmental level. This was assessed during the interview using items adapted from the Diagnostic Interview for Social and Communication Disorders. ⁴ Developmental level scores ranged from 0 (no speech or meaningful vocalizations) to 6 (uses past, present and future tenses and complex sentences).

The severity of social symptoms was also measured for children with chronological age ≥ 4 years (n = 26), using the Social Communication Questionnaire.

Results

1. Functions of repetitive behaviors

Boxplot showing the level of endorsement of the five functions assessed by the MAS-R

There were significant differences in the degree to which the five functions were endorsed, F(1,85) = 64.9, p < .001. Post hoc tests revealed that controlling sensory feedback was more highly endorsed than responding to anxiety (p = .002), which was more highly endorsed than the three extrinsic functions (p < .001), which did not differ from each other (ps > .50).

2. Relations between functions, developmental level, and social symptoms

- There were positive relations between developmental (expressive language) level and two of the extrinsic subscales, escaping from demands and gaining tangible reward (see table below).
- Children with greater social impairment scored lower than others on responding to anxiety and escaping from demands. There was a positive correlation between responding to anxiety and escaping from demands, p = .48, p = .003.
- Partialling out chronological age made no difference to the pattern of results, except to strengthen the negative correlation between developmental level and controlling sensory feedback, r = -.37, p = .04.

<table>
<thead>
<tr>
<th>Developmental level</th>
<th>Social symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controlling sensory feedback</td>
<td>- .28</td>
</tr>
<tr>
<td>Responding to anxiety</td>
<td>.10</td>
</tr>
<tr>
<td>Escaping from demands</td>
<td>.47*</td>
</tr>
<tr>
<td>Gaining social attention</td>
<td>.19</td>
</tr>
<tr>
<td>Gaining tangible reward</td>
<td>.37*</td>
</tr>
</tbody>
</table>

* p < .05

Correlation coefficients are Pearson’s r except for those shown in italics which are Spearman’s r. There was no correlation between developmental level and social symptoms, r = .10, ns.

References


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Summary

Parent reports suggested that repetitive sensory and motor behaviors serve intrinsic functions related to both under- and over-arousal and, to a lesser extent, other, extrinsic, functions.

Analysis of individual differences suggested that the functions of repetitive behaviors become more diverse with increasing developmental level and social skill.