



Factors associated with empathic responsiveness in children and adolescents with high-functioning ASD



Autism Research Amsterdam **Anke M. Scheeren, Hans M. Koot, Peter C. Mundy, Larissa Mous, & Sander Begeer** VU University Amsterdam

Background

- A lack of empathic responsiveness, the ability to respond to others' emotions, has been put forward as a core problem in autism (Kanner, 1943)
- Previous studies have shown reduced empathic responsiveness in groups of children with autism spectrum disorder (ASD) compared to typically developing peers and peers with an intellectual disability
- However, these studies ignored the large individual differences *within* the autism spectrum
- Children with ASD vary in degree and quality of autistic symptoms (Mundy et al., 2007), as well as cognitive abilities such as Theory of Mind and executive functioning (Pellicano, 2010)
- In typical development, individual differences in temperament explain variance in children's empathic responsiveness (Eisenberg et al., 1998)



Objective

Linking individual differences in temperament, Theory of Mind and executive functioning to variance in empathic responsiveness in children and adolescents with high-functioning ASD (HFASD).

Research question

Are individual differences in (1) temperament, (2) Theory of Mind, and (3) executive functioning associated with variance in empathic responsiveness of children and adolescents with HFASD?

Participants

- 121 participants (104 boys; 17 girls) with HFASD
- Mean age: 13.3 years (SD=2.72; range: 6.9-18.8)
- Mean receptive verbal IQ: 106.1 (SD=12.38; range: 72-132)
- Autism: n=23; Asperger's Syndrome: n=18; PDD-NOS: n=80

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Measures

- **Temperament:** Emotionality Activity Sociability Temperament Survey (EAS; parent questionnaire; Buss & Plomin, 1984)
- **Theory of Mind (ToM):** ToM task consisting of five social stories derived from Sullivan et al. (1994), Begeer et al. (2011), and Kaland et al. (2008)
- **Executive functioning (EF):** Behavior Rating Inventory of Executive Function (BRIEF; parent questionnaire; Gioia et al., 2002)
- **Empathic responsiveness (ER):**
 - **structured observations** of participants' responses to the simulated emotional states (happiness, sadness, and pain) of an adult interviewer (**see also poster 161.187 now**)
 - **parent reports** of their child's empathic responsiveness in comparable situations
 - **joint measure of ER:** structured observations and parent reports combined

Analyses

- Hierarchical multiple regression analyses with empathic verbal responses as dependent variable and age, verbal IQ (step 1), temperament (step 2), ToM and EF (step 3) as predictors.

Table 1. Results of hierarchical multiple regression analyses

Predictors	Empathic responsiveness					
	Joint measure		Observation		Parent report	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.02		.02		.01	
Age		.15		.12		.10
Verbal IQ		.03		.03		.04
Step 2	.15**		.06		.14**	
Emotionality		-.18 [†]		-.05		-.21*
Activity		.11		.14		.07
Sociability		.22 [†]		.00		.28*
Shyness		-.10		-.19		-.02
Step 3	.03		.04 [†]		.01	
Theory of Mind		.12		.08		.10
EF problems		.15		.21*		.07
Total R ²	.20**		.12 [†]		.17**	

Note. [†] = $p < .10$; * = $p < .05$; ** = $p < .01$.

Results

- Temperament explained a significant amount of variance (15%) in children's empathic responsiveness over and above age and verbal IQ (see Table 1)
- ToM and EF failed to explain variance in empathic responsiveness over and above the variance already explained by age, receptive verbal IQ and temperament
- Temperament was strongly associated with parent reported empathic responses, but did not affect children's empathic responses to the interviewer
- An unexpected positive association was noted between children's inhibition problems (BRIEF subscale) and their empathic responses during the interview

Conclusions

1. Overall, our findings suggest that the role of temperament in children's empathic responsiveness also applies to children and adolescents with HFASD
2. ToM and EF do not play a central role in the empathic responses of children and adolescents with HFASD

Discussion

1. Individual differences in temperament influence the degree of responsiveness of children and adolescents with HFASD to others' emotions
2. The unexpected lack of association between children's ToM and their empathic responsiveness may be due to socio-cognitive nature of ToM tasks, whereas real life social interaction requires socio-perceptual aspects of ToM
3. Children with inhibition problems have the tendency to respond impulsively and may therefore also respond more readily to the emotions of an unfamiliar adult
4. Clinical implication: a child's (lack of) empathic responsiveness should be seen as the outcome of multiple factors including a child's temperament

• Autism Research Amsterdam: www.ara.vu.nl
• Correspondence: A.M.Scheeren@vu.nl

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