



Social subtypes in high-functioning ASD



Autism Research Amsterdam

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Background

- Clarification of phenotypic variability in ASD is crucial for improvement of diagnostic assessments and development of effective interventions.
- However: usefulness of the DSM-IV categories as a differentiation of individuals with ASD and a guideline for interventions remains debatable.
- Wing and Gould (1979) differentiated three social subtypes: **aloof, passive and active-but-odd**.

Table 1. Social subtypes

	Aloof	Passive	Active-but-odd
Responds to social interaction	No	Yes	Yes
Initiates social interaction	No	No	Yes

- Prior research with low-functioning children with ASD (IQ < 70) found active-but-odd children to be more intelligent and less autistic than aloof and passive children. However: intelligence could be a confounding factor in these studies.

Objective

Examination of the different social interaction styles of children with high-functioning ASD (IQ > 70) and exploring meaningful associations with several domains of functioning while controlling for level of intelligence.

Research questions

How is the social interaction style of a child with high-functioning ASD (HFASD) associated with:

1. its severity of autistic symptoms and disruptive behavior problems?
2. its psycho-social health?
3. its perspective taking and executive functioning?

Participants

The sample was recruited through specialized education and included 156 participants with HFASD:

- 134 boys (86%), 22 girls (14%)
- Clinical diagnosis: autism ($n = 29$), Asperger's Syndrome ($n = 22$), PDD-NOS ($n = 105$)
- Age: $M = 13.4$ years ($SD = 3.0$; range = 6.4-18.9)
- Verbal IQ: $M = 105$ ($SD = 12.8$; range = 72-132).

Measures

- Informants: P = parent ; T = teacher; C = child.
- **Social interaction style:** Wing Subgroups Questionnaire (WSQ; Castelloe & Dawson, 1993). The WSQ (P) generates four scores for an aloof, passive, active-but-odd and typical social interaction style.
- **Autism severity:** Autism Diagnostic Observation Schedule (ADOS) and Social Responsiveness Scale (SRS: P)
- **Disruptive problem behaviors:** Disruptive Behaviors Disorders rating scale (DBD: P&T) and Strengths and Difficulties Questionnaire (SDQ: T)
- **Psycho-social health:** Pediatric Quality of Life Inventory (PedsQL: P&C)
- **Perspective taking:** advanced Theory of Mind task (C) and Interpersonal Reactivity Index (IRI: C)
- **Executive functioning:** Behavior Rating Inventory of Executive Function (BRIEF: P)

Analyses

- Series of multiple regression analyses
- Step 1: control variables: age, verbal IQ and gender
- Step 2: three social interaction styles (WSQ)
- Step 3: fourth social interaction style (WSQ)

Results

- Active-but-odd social interaction style was positively associated with autism severity (SRS), hyperactivity (DBD), and executive functioning problems in daily life (BRIEF), and negatively associated with psycho-social health of the child (PedsQL) as reported by parents (see Table 2).

Table 2. Active-but-odd social style predicts:

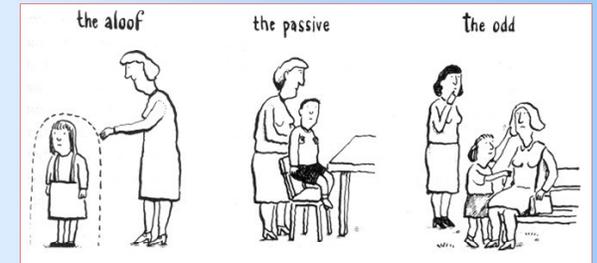
	β	ΔR^2	Total R^2
SRS Total (P)	.35 ***	.09	.67
DBD – hyperactivity (P)	.58 ***	.24	.30
DBD – hyperactivity (T)	.32 **	.07	.11
PedsQL Total (P)	-.34 ***	.08	.19
BRIEF Total (P)	.51 ***	.19	.28

β = standardized beta for the full model; ΔR^2 = unique explained variance by active-but-odd score over and above control variables and other WSQ-scores; Total R^2 = total explained variance by all WSQ-scores over and above control variables

- Aloof or passive social interaction style did not contribute uniquely to variance in outcome measures.
- As would be expected, a typical social interaction style was negatively associated with ADOS ($\beta = -.28$, $\Delta R^2 = .05$, $p < .01$) and SRS ($\beta = -.46$, $\Delta R^2 = .14$, $p < .001$).

Conclusions

1. In children with HFASD social interaction styles, and **active-but-odd** social behavior in particular, explain a significant amount of variance in autism severity, hyperactivity, executive functioning problems and psycho-social health as reported by parents.
2. Yet, social interaction styles within HFASD are unrelated to perspective taking skills and psycho-social health as reported by the children themselves.



Discussion

1. The social interaction styles of children with HFASD offer insight into the heterogeneity of ASD and appear to be a clinically relevant distinction.
2. Active-but-odd social behavior may be a potential marker in children with HFASD for increased autistic symptoms and ADHD-characteristics. Alternatively, ADHD-characteristics may moderate the expression of ASD.
3. The peculiarity of active-but-odd social behavior may lead to peer rejection, explaining parent reports of increased psycho-social problems.
4. A difficulty to inhibit impulses and regulate behavior might explain the active-but-odd social behaviors seen in some children with HFASD.

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