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## Contrasting Rorschach test results in Asperger's syndrome and high-functioning autism

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We analyzed responses to the Rorschach test by six children with high-functioning autism (mean age = 10.7 years) and by seven children with Asperger's syndrome (mean age = 9.7 years). The mean number of total responses (R) was significantly smaller for the autism group than for the Asperger's syndrome group. Mean D%, which reflects attentional bias to parts of the test figures, was significantly higher for autistic children, whereas mean dr%, which reflects their cognitive tendency of rare segmentations, was significantly higher for the Asperger's syndrome group. Contamination responses that imply disorganized imagination were found among Asperger's syndrome children. These results suggest that the cognitive characteristics of Asperger's syndrome and high-functioning autism are qualitatively different from each other.

**Key words:** Asperger's syndrome, high-functioning autism, Rorschach test.

### Introduction

Asperger's syndrome and autism (Asperger's disorder and autistic disorder) are classified into discrete categories both in ICD-10 (World Health Organization, 1993) and in DSM-IV-TR (American Psychological Association, 2000). However, the issue of whether the two disorders are qualitatively different or not is controversial (e.g., Green, 1990). On one end of the spectrum is the view that the two are essentially the same disorder. For example, Miller and Ozonoff (2000) claimed that Asperger's disorder may simply be "high-IQ autism" and that separate names for the disorders may not be warranted. Macintosh and Dissanyake (2004) also concluded that on the basis of available evidence, there seem to be few qualitative differences between the two disorders.

On the other hand, various experimental analyses and standardized tests have demonstrated concrete differences between autism and Asperger's syndrome. Using a serial choice reaction time task, Rinehart, Bradshaw, Brereton, and Tonge (2001) reported that an atypical deficit in motor preparation was found in Asperger's disorder, whereas movement preparation was characterized by a "lack of anticipation" in autism.

A few studies have compared Rorschach test responses in autism with those in Asperger's syndrome. Bernabei, Palli, Levi, Mazzoncini, and Cannoni (1999) analyzed the Rorschach

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responses of a child with autism and a child with Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS). They found “absence” of imagination in the first case and “distortion” of the imaginative process in the second. Ghaziuddin, Leiniger, and Tsai (1995) compared the Rorschach responses of twelve participants with Asperger’s syndrome (mean age = 12.2 years) with those of eight autistic individuals (mean age = 12.2 years). The mean number of total responses volunteered by the autistic group ( $R = 13.4$ ) was about a half that offered by the Asperger’s syndrome group ( $R = 25.8$ ), indicating leanness of imagination in autistic adolescents. The mean D% of the autistic group was about twice that of the Asperger’s syndrome group, although the difference was not statistically significant. Ghaziuddin et al. (1995) also reported that the Asperger’s syndrome group demonstrated a trend towards a greater level of disorganized thinking than did the high-functioning autism group.

The present study investigated whether Rorschach test responses by children with Asperger’s syndrome differ from those of children with autism, thus replicating Ghaziuddin and his colleagues’ study (1995) but using a study population of younger children.

## Methods

### *Participants*

Participants were six children (all males) with high-functioning autism and seven children (five males and two females) with Asperger’s syndrome, diagnosed according to ICD-10 diagnostic criteria at a child welfare center in a city in northeast Japan. The mean age of the autistic group was 10.7 years ( $SD 1.5$ ; range, 9.1-12.7) while the mean age of the Asperger’s syndrome group was 9.7 years ( $SD 1.8$ ; range, 7.6-12.7). The mean ages did not differ significantly. The mean full-scale IQ of the autism group was 88.2 ( $SD 18.2$ ), with a mean verbal IQ (VIQ) of 84.5 ( $SD 10.0$ ; range, 72-97) and a mean performance IQ (PIQ) of 95.8 ( $SD 19.4$ ; range, 72-127). The mean full-scale IQ of the Asperger’s syndrome group was 97.7 ( $SD 11.8$ ; range, 79-112), with a mean VIQ of 102.9 ( $SD 9.4$ ; range, 86-113) and a mean PIQ of 92.6 ( $SD 18.0$ ; range, 57-110). The two groups did not differ significantly in terms of mean full-scale IQ.

### *Procedure*

Testing and the scoring were performed according to Kataguchi’s method (Kataguchi, 1971), a Japanese variant of Klopfer’s method (Klopfer & Davidson, 1962).

## Results and Discussion

We present here only statistically significant data concerning variables identical or similar to those used in Exner’s system (Exner, 1990).

Rorschach variables were compared between the two groups using the Mann-Whitney U-test. This revealed significant or marginally significant differences between the autism and the Asperger’s syndrome groups in the total number of responses (R), D% and dr% (“dn” in Exner’s system), F-%, At (“An” in Exner’s system), and in the number of “contamination”

**Table 1** Rorschach variables of participants with Asperger's syndrome or high-functioning autism.

Variables	Asperger's syndrome		High-functioning autism		<i>P</i> value
	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )	
R	21.4	( <i>SD</i> 9.3)	10.0	( <i>SD</i> 2.9)	$p < .05$
D%	16.4	( <i>SD</i> 16.1)	33.5	( <i>SD</i> 11.5)	$p < .05$
dr% (dn)	12.7	( <i>SD</i> 12.8)	1.3	( <i>SD</i> 3.3)	$p < .05$
F - %	30.4	( <i>SD</i> 22.8)	9.8	( <i>SD</i> 11.2)	$.10 < p < .05$
At% (An)	8.6	( <i>SD</i> 12.6)	0		$.10 < p < .05$
N of contamination	1.4	( <i>SD</i> 1.3)	0.2	( <i>SD</i> 0.4)	$p < .05$

responses, which express an inability to establish and maintain a fundamental boundary between independent objects, events, or thoughts (Blatt, Besser, & Ford, 2007).

The autism group generated a smaller mean number of total responses (mean  $R = 10.0$ ) than the Asperger's syndrome group (mean  $R = 21.4$ ). The mean  $R$  of the autism group is about half the norm for healthy 10 year-old children (mean  $R = 20.97$ ) by Exner (1990), and is near the mean  $R$  (13.4) seen in the autism group in Ghaziuddin and colleagues' study (1995). This result agrees with Bernabei et al.'s finding (1999) that a 6-year-old autistic child exhibited "absence" of imagination in Rorschach responses. The mean  $D\%$  of our autism group was significantly higher than that of the Asperger's syndrome group, indicating their attentional bias to fragmental parts of test figures.

The Asperger's syndrome group showed a higher  $F - \%$  and higher  $At\%$  ("An" in Exner's system) than the high-functioning autism group. This group also showed nearly ten times higher  $dr\%$  (rare segmentations) than the autistic group. Moreover, the Asperger's syndrome group offered a mean number of 1.4 contamination responses, a finding rarely seen among normal children or adults. In all, results of the Asperger's syndrome group (higher  $F - \%$ , higher  $At\%$ , higher  $dr\%$ , and appearance of contamination responses) suggest a peculiarity in their imaginative processes.

Ghaziuddin et al. (1995) reported that participants with Asperger's syndrome demonstrated a trend towards greater levels of disorganized thinking. Bernabei et al. (1999) found an "absence" of imagination in an autistic child and "distortion" of the imaginative process in a PDD-NOS child. Our present findings regarding the Asperger's syndrome participants reinforce the above views.

Although Ghaziuddin et al. (1995) moderately concluded that the Rorschach test did not differentiate the two diagnostic groups on the majority of structural variables, the present results suggest that the cognitive characteristics of individuals with the two disorders are quite different.

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