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PERSONALITY ATTRIBUTES OF ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) USING THE RORSCHACH INKBLOT TEST

ALBERT J. COTUGNO

Harvard Medical School

This study investigated Rorschach Inkblot Test response patterns in a group of children diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) and compared them to matched samples of clinical control and normal control groups. The findings indicated that the ADHD and clinical control groups both demonstrated markedly limited coping capacities, an avoidance of affect-laden stimuli, difficulties with self- and interpersonal perceptions, problems in perceiving reality accurately, and a vulnerability to depression. The ADHD group demonstrated significantly more intense feelings of isolation and discomfort, less social involvement, avoidance of decision-making, and more dependence, while the clinical control group demonstrated a significantly higher level of psychological disorganization and thinking problems.

Hyperactivity and attentional problems in children continue to occupy a great deal of attention of professionals, educators, and parents, as they attempt to provide help for children who are experiencing these problems. Most recent and valid estimates suggest that approximately 3 to 5% of school-age children experience significant problems with modulation of motor activity, capacity to focus and sustain attention, and control of impulses to warrant the diagnosis of attention deficit hyperactivity disorder (ADHD) (Barkley, 1991; Goldstein & Goldstein, 1990). In referrals of children in schools and to mental health clinics, ADHD-related problems have been estimated to account for between 40 and 70% of all child referrals (Ross & Ross, 1982). These may include combinations of behavioral concerns, cognitive processing problems (Cotugno, 1987), anxiety and mood disorders (Cotugno, 1993), and special education needs (Cotugno, 1982; Cotugno & Levine, 1990).

While there is a history of controversy and inconsistency in defining ADHD, this has been lessened to a great extent by the increased specification of diagnostic criteria proposed in the *Diagnostic and Statistical Manual (3rd ed. rev.)* (DSM-III-R) and its

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Reprint requests should be addressed to Albert J. Cotugno, Ph.D., 35 Meadowbrook Road, Needham, MA 02192.

most recent revision, DSM-IV (American Psychiatric Association, 1987, 1994). With regard to essential criteria, particularly hyperactivity, inattention, and impulsivity, concerns are raised when these behaviors occur to a developmentally inappropriate degree, are a consistent pattern of response, and are pervasive across a variety of contexts and situations, all of which result in conflicts with the environment that bring these children to the attention of parents, educators, and professionals. Despite the significant problems that ADHD children experience, little effort has been made to understand the relationship between the occurrence of particular ADHD behaviors and socio-emotional functioning using standardized test instruments, such as the Rorschach Inkblot Test. In general, little is known about the effects of ADHD on emotional patterns as demonstrated on the Rorschach. Because the Rorschach Test provides useful data on a broad range of personality attributes, it should provide a better understanding of the complex relationship among ADHD, its behavioral outcomes, and the effects of these response patterns on socioemotional functioning.

Clearly, the Rorschach should not be the sole source of information on these issues, but when used in conjunction with other procedures, including both standardized and survey instruments, it may prove to enhance the understanding of ADHD in children, particularly with respect to the relationship between behaviors that cause significant problems at home and at school, cognitive processing of information, and socioemotional functioning.

This study attempts to focus on and examine the underlying cognitive and personality attributes of children diagnosed as ADHD as demonstrated on the Rorschach Inkblot Test, a procedure frequently used as part of an overall psychological evaluation. The purpose of this study, then, was to investigate whether and in what ways a group of ADHD children differed from a clinical control group and a normal control group of children.

Method

Subjects

The subjects for this study were 120 children, aged 5 and 6 years. The two clinical groups (ADHD and clinical control) consisted of 80 children, 40 children each, who were referred to a moderate-size community mental health center for assessment and evaluation. For inclusion in the group of ADHD children, subjects had to meet three criteria:

1. They had been given the diagnosis of ADHD by a medical (pediatrician, physician) or mental health (psychologist, social worker, psychiatrist) professional within the previous year, based on at least one direct child contact within that period.
2. They obtained behavior ratings on both school and home versions of one of two behavior rating scales used (Children's Attention and Adjustment Survey: Lambert, Hartsough, & Sandoval, 1991; Conners Ratings Scales: Conners, 1989) that indicated behavior manifestations consistent with the diagnosis of ADHD.
3. They met at least 8 of 14 criteria specified by DSM-III-R (American Psychiatric Association, 1987) for the diagnosis of ADHD on a DSM-III-R ADHD criterion checklist. This checklist was completed by the clinician who conducted the initial parent/caretaker and child interviews to gather historical and observational information.

Children were not included as ADHD if they did not meet all of these criteria. This set of multi-level criteria was employed to ensure that those children included in this study as ADHD had been observed and reported to demonstrate behaviors consistent with a diagnosis of ADHD by at least two different observers (medical/mental health professional, teacher, parent) in at least two different environments (office, school, home). This selection process resulted in a confirmed ADHD group of 40 children, which included 33 boys (82.5%) and 7 girls (17.5%).

Children who did not meet this set of multi-level criteria for ADHD were included in the non-ADHD clinical control group if they met a similar set of exclusionary criteria designed to ensure that no borderline ADHD children would be included in this group. Children were included in this clinical control group if they met three criteria:

1. There were no indications from past or present observations or reports of hyperactivity or inattention as a primary symptom that may have suggested ADHD as a diagnosis.
2. On the school and home versions of the two behavior rating scales obtained, there were no indications of ADHD-related behaviors.
3. The clinician-completed ADHD criterion checklist contained no more than 6 of the 14 criteria necessary for a diagnosis of ADHD. Children in this group also were matched by age and gender to the ADHD group.

The normal control group consisted of 40 5- and 6-year-old children who attended local preschool and kindergarten classes. Children only were included in this group if they had no history of prior referral for special education or mental health services and if there were no indications from past or present observations or reports (teacher, parent) or hyperactivity or inattention as a behavioral descriptor. Children in this group also were matched by age and gender to the ADHD and clinical control group.

The decision to include only 5- and 6-year-old children in this study was made in order to control for the effects of certain school-related variables, including learning disabilities, low self-esteem related to poor school achievement, and peer problems. In this way, any long-term effects related to a variety of school-based variables would be limited.

Overall, the 120 children included in this study consisted of 99 boys (82.5%) and 21 girls (17.5%) and ranged in age from 5 years 0 months to 6 years 11 months with a mean age of 5 years 9 months. Wechsler Full Scale IQs obtained for the ADHD and clinical control groups as part of the evaluation ranged from 83 to 121 with a mean IQ of 95 (SD = 9.8).

Procedure

Each child in the ADHD and clinical control groups was administered a standard battery of psychological tests, which covered an assessment of intellectual, cognitive, academic, and personality functioning, including the Rorschach Inkblot Test. Children in the normal control group were administered only the Rorschach. Each Rorschach was administered and scored by examiners formally trained in the use of Exner's (1990, 1991, 1993) Comprehensive System. A subset of 20 randomly selected protocols was scored a second time by another trained examiner unaware of the reasons for referral and purposes of this study. Agreement was attained on 86% of the responses scored; interscorer reliability ranged from .82 to .91.

In line with Exner's (1993) suggestions, the data were not reviewed as a group of singular variables, but were considered in clusters of variables, each of which relates to specific characteristics of personality. General clustered variables globally conformed to Exner's (1991) specifications, but were reduced in number so as to allow for appropriate statistical analyses. In all, 24 variables were analyzed, including number of responses, lambda, 19 variables from key variable clusters, and three indices. A list and description of the variables, clusters, and indices used is contained in the Appendix.

After statistical analyses, key variables were prioritized, and the interpretive search strategy recommended by Exner (1993) was followed. In this situation, CDI for both the ADHD and clinical control group was greater than three, and, thus, the interpretive search analyzed the following clusters in order: Controls, Affect, Self-perception, Interpersonal Perception, Processing, Mediation, and Ideation.

Results

Univariate analyses of variance (ANOVA) were used to study the effects of the Rorschach variables on groups, followed by Scheffé post-hoc analyses on between-group differences. Table 1 provides the means, standard deviations, and significance tests of Rorschach variables for the groups of ADHD, clinical control, and normal control children. When the ADHD, clinical control, and normal control groups were compared, the means, ranges, and standard deviations of total number of responses were not significantly different. However, both the ADHD and the clinical control groups demonstrated significantly higher lambda scores than the normal control group, $F(2,117) = 6.66$,

Table 1
Descriptive Statistics and Significance Tests for the Rorschach Variables in ADHD, Clinical Control, and Normal Control Groups

	ADHD		Clinical		Normal		
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*
Responses	17.63	3.23	18.60	2.21	18.28	1.21	*ns*
Lambda	1.53	1.15	1.33	.65	1.01	.42	6.66**
Capacity for control and stress tolerance							
D	−.47	.81	−.50	.52	−.33	.51	*ns*
Adj D	−.44	.80	−.49	.61	−.21	.41	*ns*
Affect							
Sum C	2.41	1.21	2.01	1.02	4.70	.81	6.19**
Sum Sh	3.59	2.66	3.62	2.41	1.86	.93	3.57*
Afr	.49	.17	.45	.22	.75	.20	11.57***
Blends	1.41	1.36	2.50	1.39	2.51	1.21	4.23*
Self-perception							
3r + (2)/R	.20	.17	.26	.09	.49	.15	16.00***
Mor	.59	1.45	2.20	1.01	.69	.66	3.09*
Interpersonal perception							
Cop	.19	.64	.70	.61	1.58	.53	7.04**
Pure H	1.38	1.39	1.50	.91	2.41	.82	3.27*
Ag	.19	.59	.42	.47	.59	.62	3.10*
Processing							
Zf	9.56	3.21	11.90	2.57	10.16	1.81	*ns*
Zd	−1.16	2.26	−2.25	1.99	−1.26	2.40	*ns*
Mediation							
P	3.50	1.57	3.60	1.17	4.84	1.56	3.32*
X+%	.41	.16	.38	.11	.63	.09	12.41***
X−%	.31	.15	.34	.10	.15	.06	8.15***
Xu%	.23	.11	.25	.16	.09	1.11	3.21*
Ideation							
Sum 6	2.19	2.40	5.37	2.01	4.25	1.70	4.87**
W Sum 6	7.78	8.61	20.05	4.92	12.69	4.86	4.49*
Indices							
SCZI	2.56	1.52	3.41	1.06	.81	1.04	6.16**
DEPI	4.81	1.25	4.32	.99	1.72	.82	15.78***
CDI	3.78	.83	3.51	.48	1.66	.43	3.79*

*$p < .05$. **$p < .01$. ***$p < .001$.

$p < .01$, which indicates a basic response style that tended markedly to narrow or simplify more complex stimulus fields of information.

In terms of the Capacity for Control and Stress Tolerance cluster, univariate tests revealed that there were no statistical differences among groups on either D or Adj D, both measures of the capacity to formulate and control behaviors under usual and stressful conditions. This implies that each group, under most circumstances, had sufficient ability to initiate and direct behaviors when and if internal resources can be accessed.

In the Affect cluster, differentiation by group produced significant effects. Univariate tests revealed that both the ADHD and clinical control groups produced fewer Sum C responses, $F(2,117) = 6.19$, $p < .01$, more Sum Sh responses, $F(2,117) = 3.57$, $p < .05$, and a lower Affective Ratio, $F(2,117) = 11.57$, $p < .001$, than the normal control group. Further analysis revealed that the ADHD group also produced significantly fewer Blends than both clinical and normal control groups. These data, together with the high lambda scores for both ADHD and clinical controls, indicate that the marked tendency by both these groups to narrow and simplify the stimulus fields presented, results in an overcontrol of impulse expression through withdrawal from emotion-arousing stimuli and in negative affects and feelings related to internal distress and discomfort. The significantly fewer Blends reported by the ADHD group indicate further withdrawal from and avoidance of complexity.

On the Self Perception cluster, the ADHD and clinical control groups both produced significantly lower Egocentricity Index scores when compared to the normal control group, $F(2,117) = 16.00$, $p < .001$. The clinical control group produced significantly more MOR responses than both the ADHD and normal control groups. These data indicate that the ADHD and clinical control groups experience generally lower self-esteem and tend to make more negative judgments about the relationship between self and others. The data for the clinical control group suggest not only negative self-perceptions, but also unusual self-inspecting behavior and significant pessimism in thinking, all potential precursors to depression.

On the Interpersonal Perception cluster, univariate tests indicated that ADHD and clinical control groups produced significantly fewer COP, $F(2,117) = 7.04$, $p < .01$, and fewer Pure H, $F(2,117) = 3.27$, $p < .05$, responses than the normal control group. The ADHD group also produced significantly fewer COP and fewer AG responses than both the clinical and normal control group. These data suggest that the ADHD and clinical control groups experience less interest or willingness to engage others actively and that they feel less secure and comfortable in interpersonal situations. In the ADHD group, this type of experience was significantly more exaggerated than with the clinical control group, which suggests more intense feelings of isolation and discomfort.

On the Processing cluster, univariate tests revealed that there were no statistical differences between groups on either Zf or Zd, an indication that the input of information is relatively efficient across groups.

The Mediation cluster revealed significant effects by group. Univariate tests indicated that the ADHD and clinical control groups both produced significantly fewer P responses, $F(2,117) = 3.32$, $p < .05$, lower X+%, $F(2,117) = 12.41$, $p < .001$, higher X−%, $F(2,117) = 8.15$, $p < .001$, and higher Xu%, $F(2,117) = 3.21$, $p < .05$. These data indicate that both the ADHD and clinical control groups view reality in an unconventional, unrealistic, and illogical manner and, in fact, often grossly distort reality in their perception of situations. This probably is exacerbated by oversimplification of stimuli and avoidance and withdrawal from information perceived as stressful.

There was a significant effect by group on the Ideation cluster. The ADHD group produced significantly lower SUM6, $F(2,117) = 4.87$, $p < .01$, and WSum6, $F(2,117) = 4.49$, $p < .05$, scores than both the clinical and normal control groups. On the other hand, the clinical control group produced somewhat higher Sum6 scores and significantly

higher WSum6 scores than either the ADHD or normal control groups. The data for both the ADHD and clinical control groups indicate that response formulation consistently makes use of limited information because stimuli are avoided, withdrawn from, or overly simplified, which creates the potential for overall variability. While there is little indication of cognitive slippage for the ADHD group, there is avoidance and withdrawal from stimuli that create the potential for those situations. Conversely, the clinical control group demonstrated significant cognitive slippage and gross distortions of reality when compared to the normal control group.

In addition to Rorschach variables and derived clusters, the Comprehensive System employs the use of three indices, the Schizophrenia (SCZI), Depression (DEPI), and Coping Deficit (CDI) indices, to cluster variables and to assess the level or degree of psychological disorganization when compared to normative data. For the three indices, univariate analyses of variance were performed, and, as expected, each analysis was significant.

On the CDI, both the ADHD and clinical control groups attained scores higher than the normal control group, $F(2,117) = 3.79$, $p < .05$. The ADHD group scores were higher, but not significantly discrepant from the clinical control group scores. The data suggest that the decreased ability to cope by the ADHD and clinical control groups is related to fewer available resources, an avoidance of stimuli (Afr, WSumC), and less involvement with others (Pure H, COP). However, both groups appear to experience significant ongoing and chronic stimulus overload (Sum Sh), which renders them more vulnerable to control problems and more susceptible to disorganization under stress.

On the DEPI, both the ADHD and clinical control groups attained scores significantly higher than the normal control groups, $F(2,117) = 15.78$, $p < .001$. No significant difference between the ADHD and clinical control groups occurred on DEPI. These higher scores on the DEPI by the ADHD and clinical control groups indicate lower self-esteem (Egocentricity Index), more negative thinking, more simplistic thinking (Blends), a tendency to avoid emotion-laden stimuli (Afr), unwillingness to engage or view others in helpful, cooperative ways (COP), and the experience of ongoing and chronic stimulus overload (Sum Sh).

The clinical control group attained significantly higher scores on SCZI than either the ADHD or normal control groups, $F(2,117) = 6.16$, $p < .05$, which indicates a generally higher level of psychological disorganization and thinking problems. The ADHD group attained scores higher than the normal control group, but lower than the clinical control group, which indicates unconventional thought processes, but without the significant distortion evident in the clinical control group.

Discussion

The results of this study indicate that both ADHD and clinical control groups differ significantly from the normal control group on a number of Rorschach variables. Both groups appear to experience a range of psychological dysfunction as represented in the internal world of the child. Both groups employ a high lambda style (Exner, 1991), in which complex information is simplified and narrowed. This creates situations in which important and critical elements are ignored, neglected, or given little importance and, thus, are not included or integrated in the response formulation process.

When compared to the normal control group, the Rorschach protocols of the ADHD and clinical control groups indicate significant coping deficiencies, a vulnerability to depressive-like experiences, and a tendency to view reality in an unconventional, unrealistic, and illogical manner. Significant problems for both groups appear in aspects of information processing, self- and interpersonal perceptions, affective expression, ideation, and mediating variables. When taken together, both the ADHD and clinical control groups significantly avoid encounters with emotional stimuli. When these issues are

addressed, they are influenced heavily by negative views of themselves and in relation to others. Despite the attempts by both groups to withdraw from and to avoid emotion-laden information, they nevertheless experienced a high level of stress related to excessive demands made on limited resources and exhibited more disturbed thinking, including unrealistic and illogical patterns of thought.

However, ADHD children differ from the clinical control group in significant ways. They exhibited a more exaggerated lambda style, which indicates an even greater need to reduce situations to more easily managed levels and possibly as a means of conserving limited psychological resources. Exner (1991) suggests that this style may be related to immaturity or social ineptness. As a result, the confusion, disorganization, and thinking disturbances of ADHD children appear much more related to attempts to avoid most stimuli. These ongoing attempts to avoid complexity in favor of simplistic internal constructions and representations may be related to attentional factors. Thus, as stimulus demands increase, inattention, distractibility, and impulsivity result in a premature disengagement from the stimuli prior to the formulation of effective, integrated responses. This appears particularly true in the reduced number of Blends, Sum C, Afr, Sum6, and WSum6, indicative of relatively little cognitive risk taking.

In contrast, the clinical control group tended to avoid particular kinds of emotion-arousing stimuli (i.e., chromatic stimuli), and when avoidance was not possible, thinking became much more prone to distortion and misperception (SCZI, Sum6, WSum6, MOR). Thus, the ideational and mediational demands of the Rorschach appear to result in much more significant breakdowns in thought and perception for the clinical control group as compared to the ADHD group.

Although recent research with ADHD children has focused on behavioral manifestations and their measurement, the findings of this study suggest that the level of internal psychological distress experienced by ADHD children is significant and warrants further investigation. This disruption in basic psychological functioning is likely to have a significant impact on subsequent performance and functioning.

The results of this study appear to make clear the need to help ADHD children better manage chronic distress and discomfort, intensified by negative and pessimistic views of the self and of their interactions with the environment. Attempts to manage behavior and internal stress and discomfort more effectively often can be accomplished initially through comprehensive behavior management planning and the linking of means-ends consequences with home, school, and peer group interactions. This serves over time to reduce situational stressors and to manage more effectively interactions with the environment. This also should enhance the construction of more adaptive problem-solving strategies that increase control.

The tendency of ADHD children to simplify stimulus demands, to avoid emotionally laden stimuli, and to misperceive and distort information also suggests the need for a high degree of structure in their environment as well as in any therapeutic interventions introduced. While these efforts may be resisted, ultimately they will serve to stabilize and make more consistent and predictable the environments to be managed.

Social skills, self-control, and esteem-building peer group counseling experiences may provide ways for these children to learn to relate more positively to peers, to derive pleasure from interpersonal interactions, and to gain insight into which behaviors serve most to isolate and alienate them from peers. These group experiences also can serve to improve the accuracy of their view of reality and to help them better judge situations with which they are confronted.

Additionally, involvement of the family in treatment can serve to address and reduce conflictual interactions, reorient behavioral goals, and encourage mutual and reciprocal understanding of individual and family needs.

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APPENDIX
Clusters, Variables, and Indices for Rorschach Data Examined

Cluster	Variable	Description
	Lambda	Relates to issues of economizing the use of resources
Stress tolerance and control	D	Relates to issues of stress tolerance and elements of control
	Adj D	Relates to stress tolerance and control as influenced by situational elements
Processing	Zf	Responses that contain some synthesis of the blot stimuli
	Zd	Relates to the efficiency of processing based on the degree of organizational activity
Affect	Afr	Relates to interest and reactivity to emotional stimulation
	Blends	Complex responses that make use of multiple determinents
	Sum C	Relates to the expression and modulation of affect
	Sum Sh	Relates to the extent and impact of current stimulus demands
Mediation	P	Popular responses that employ conventional representations
	X + %	Relates to the use of conventional form in response construction
	X − %	Relates to the degree of perceptual distortion
	Xu%	Relates to the unconventional and unusual (but not distorted) use of form
Self-perception	3r + (2)/R	Relates to egocentricity and self-esteem
	Mor	Relates to the use of morbid content
Interpersonal perception	Cop	Responses that employ cooperative movement
	Pure H	Relates to interest and concern for other human beings
	AG	Responses that include clear and direct aggression
Ideation	Sum6	Responses that receive Special Scores for unusual response characteristics
	WSum6	A weighted sum of Special Scores that relate to cognitive slippage
SCZI		An index that measures the extent of disordered thinking and perception
DEPI		An index that measures the extent of emotional and cognitive depression
CDI		An index that measures the extent of interpersonal effectiveness, capacity to form and direct responses, and vulnerability for problems in everyday living