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ABSTRACT

This study involved 30 children with attention deficit disorder with hyperactivity (ADD+H), 14 children with attention deficit disorder without hyperactivity (ADD-H), and 28 clinic control children, with a mean age of 8.1 years, and utilized an extreme groups methodology. The study tested the hypothesis that the teacher-rated social behavior of ADD-H children would be characterized by social withdrawal and the ADD+H children by aggression. The hypothesis was confirmed, and the study concluded that this finding underlines the potential utility of separation of these two groups on the overactive dimension. (Contains 12 references.) (JDD)

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Social Withdrawal and Aggression in Subgroups of ADHD Children

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ABSTRACT

Children with developmentally inappropriate levels of inattention, impulsivity and/or overactivity comprise a highly diverse clinical group currently referred to as attention deficit hyperactivity disorder (ADHD). When these children are distinguished on the basis of presence or absence of overactivity, important differences emerge. The present study identified groups of attention deficit disorder with hyperactivity (ADD+H), attention deficit disorder without hyperactivity (ADD-H) and clinic control children utilizing an extreme groups methodology to test the hypothesis that the teacher-rated social behavior of ADD-H children would be characterized by social withdrawal, and the ADD+H children by aggression. This hypothesis was confirmed and has important implications for development of unique multi-modal interventions.

Social Withdrawal and Aggression in Subgroups of ADHD Children

Attention deficit hyperactivity disorder (ADHD) comprises a heterogeneous group of children having in common developmentally inappropriate levels of inattention, impulsivity and in some cases overactivity. Children receiving a diagnosis of ADHD present with a diversity of family backgrounds, developmental courses, associated symptomatology and responses to treatments. This diversity has lead several investigators to attempt to subtype this disorder into more homogeneous, clinically meaningful subgroups.

One approach to subtyping ADHD is based on the presence or absence of overactivity. Earlier studies on these subtypes have yielded mixed results. Some have found few, if any, important differences between attention deficit disorder children with hyperactivity (ADD+H) and attention deficit disorder children without hyperactivity (ADD-H) (e.g., Maurer & Stewart, 1980; Rubenstein & Brown, 1984). However, these studies have been criticized for the use of nonclinical samples and reliance on clinical judgments using DSM-III criteria, a method likely to result in relatively impure ADD subgroups (Lahey, Pelham, Schaughency, Atkins, Murphy, Hynd, Russo, Hartdagen, & Lorys-Vernon, 1988). In contrast, Lahey, Schaughency, Hynd, Carlson and Nieves (1987), found that clinic-referred ADD+H children were more impulsive and aggressive than ADD-H children, but that ADD-H children displayed a more "sluggish cognitive tempo" and were more anxious than ADD+H children. In perhaps the most comprehensive evaluation to date of subgroups of ADHD children,

Barkley, Dupaul and McMurray (1990), compared ADD+H, ADD-H, learning disabled, and normal control children on an extensive battery of interviews, behavior ratings, tests and direct observations. They found that children with ADD+H were described by parents and teachers as more noisy, disruptive, messy, irresponsible and immature, whereas the ADD-H children were rated as more confused, daydreamy or lost in thought, apathetic and lethargic. The authors suggested that these findings support the hypothesis that there are two clinically distinct subtypes of ADD children, one of which is characterized by problems with behavioral organization and disinhibition (i.e., ADD+H), and the other by a slow cognitive tempo and inwardly-directed attention or mental preoccupation (i.e., ADD-H).

Much less is known about the social behavior and peer relations of ADD+H and ADD-H children. Two previous studies have found that both groups of children are disliked and rejected by their peers (i.e. Carlson, Lahey, Frame, and Hynd, 1987; King and Young, 1982), although ADD+H children appear to receive a higher number of "liked least" peer nominations and are more likely to be viewed by peers and teachers as physically aggressive.

The purpose of the present study was to identify groups of ADD+H, ADD-H and clinic control children utilizing empirically established research criteria (Barkley, et. al., 1990) in order to test the hypothesis that the teacher-rated social behavior of ADD-H children will be characterized by social withdrawal, while the social behavior of ADD+H children will be primarily perceived as aggressive. Following a recommendation made by Barkley, et. al. (1990), the two ADD groups were formed using a larger separation on the overactivity

dimension than in previous studies in order to minimize potential overlap on important behavioral dimensions. Kenneth Rubin and his colleagues have successfully employed this extreme groups methodology in studying extremely aggressive and extremely withdrawn school children (e.g., Rubin, Hymel & Xinyin Chen, 1991).

Method and Results

Subjects for the present study were obtained from consecutive referrals to an outpatient clinic for behavior and learning problems located at a pediatric teaching hospital at a southeastern medical center. One hundred and twenty-nine children were evaluated over a period of twenty four months. The mean age of the sample was 8.1 years and was composed of 108 males and 21 females.

The sample was divided into three groups based on scores on the Child Attention Profile (CAP: Barkley et al., 1990). The CAP is a two-factor scale derived from items on the Inattention (7 items) and Nervous-Overactive (5 items) scale of the Child Behavior Checklist (CBCL) - Teacher Report Form (Achenbach & Edelbrock, 1986). The CAP demonstrates satisfactory internal consistency (split half $r = .84$). Interrater reliability using teacher reports for boys ages 6-11 years was .77. Test-retest reliability was reported to be .96 over 2 weeks and .70 over 4 months. The scale significantly discriminated referred and non-referred children from the standardization sample and has proven successful in previous attempts to discriminate ADD+H and ADD-H children (cf. Barkley et al., 1990).

The ADD+H group was comprised of 30 children, 26 males and 4 females scoring above the 93rd percentile on the CAP Inattention factor and 1.5 standard deviations above the mean on the CAP

Overactivity factor (raw score > 8 for males and > 7 for females). The ADD-H group was comprised of 14 children, 10 males and 4 females scoring above the 93rd percentile on the CAP Inattention factor and 1.5 standard deviations below the mean on the CAP Overactive factor (raw score < 5 for males and < 4 for females). A third group was formed from clinic-referred children meeting the single criterion of falling below the 93rd percentile on both the Inattention and Overactivity factors of the CAP (21 males and 8 females).

The three clinic-referred groups (ADD+H, ADD-H and contrast) were compared on teacher ratings from the CBCL - Teacher Report Form (Achenbach and Edelbrock, 1986), excluding the Inattention and Nervous - Overactivity subscales which include the items used in the CAP. Table 1 provides a summary of the results of a series of univariate analyses and post hoc comparisons. The ADD+H and ADD-H groups were found to significantly differ on two subscales: 1) the ADD-H group obtained the highest ratings on Social Withdrawal (I score mean = 69.3) and differed significantly from both the ADD+H and contrast groups, which did not differ, $F(3, 72) = 4.60$, $p < .01$ and, 2) the ADD+H group obtained the highest rating on Aggression (I score mean = 73.6) and differed significantly from both the ADD-H and contrast groups, which did not differ, $F(2, 72) = 9.05$, $p < .01$.

Additionally, the ADD+H group obtained significantly higher ratings than the contrast group on the Self-Destructive and Unpopular subscales ($p < .01$). An analysis of maternal ratings from the parent's CBCL (Achenbach and Edelbrock, 1986) yielded no significant differences, but there was an observed trend for ADD-H children to be rated as more depressed ($p < .05$).

Discussion

Previous studies have demonstrated that ADD-H children obtain higher social withdrawal ratings than controls (Barkley, et al., 1990; Carlson, 1986) but this study is the first evidence that ADD-H and ADD+H children differ on this behavioral dimension. This finding underlines the potential utility of greater separation of these two groups on the overactive dimension. The ADD subgroups identified by Barkley et al. (1990) were separated by only a 0.5 standard deviation on the CAP Overactive scale. The authors felt that some children who actually had ADD+H may have been assigned to the ADD-H group because their activity ratings, although high, were not as deviant as their inattention. Given that research on these subgroups is still in a preliminary stage, the stricter group formation criteria employed in the present study may help to clarify important differences between the two.

The withdrawn versus aggressive distinction, obtained with these ADD-H and ADD+H children parallels recent research on the subtyping of peer-rejected children, which has documented distinct subgroups of withdrawn and aggressive children from elementary age to early adolescence (e.g., Bierman, 1991; Hodgins and McCoy, 1990). The fact that both ADD groups are peer-rejected presents the possibility that these children may be represented within the rejected-aggressive and rejected-withdrawn subgroups. Direct observation of peer interaction coupled with peer sociometric data of ADD-H and ADD+H children would provide a direct test of this hypothesis. Research of this nature is needed to untangle the effects of destructive social experiences on the developmental outcomes of ADD+H and ADD-H children, and to lay

the foundation for unique multi-modal intervention programs to treat the particular constellation of symptoms that characterize each group.

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Table 1
 Means for Teacher Ratings of Child Behavior for Each Group

Measure	A. ADD+H	B. ADD-H	C. Contrast	p<	Contrast between groups
Child Behavior Checklist					
Anxious					
M	59.1	61.3	55.3		
SD	6.70	8.76	3.38		
Social Withdrawal					
M	62.6	69.3	60.0	.01	B>A,C
SD	8.67	7.45			
Unpopular					
M	66.2	63.3	59.4	.01	A>C
SD	6.48	7.16	6.02		
Self Destructive					
M	68.1	66.0	60.2	.01	A>C
SD	6.65	5.15	5.19		
Obsessive-Compulsive					
M	68.3	66.4	61.9		
SD	8.62	4.79	4.83		
Aggressive					
M	73.6	62.5	61.7	.01	A>B,C
SD	8.37	4.87	8.98		