Comorbid Symptom Severity in Attention-Deficit/Hyperactivity Disorder: A Clinical Study

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ABSTRACT

Objective: Although current attention-deficit/hyperactivity disorder (ADHD) diagnostic criteria do not include emotional symptoms, externalizing behavior problems, or aggression, the practicing clinician is often faced with the evaluation and management of these symptoms when assessing and treating patients with ADHD. While much research has focused on comorbid disorders in ADHD, less attention has been directed to comorbid symptoms that may or may not meet syndrome criteria but that influence ADHD treatment planning and outcome. The aim of this study is to describe emotional and behavioral symptoms in children and adolescents with ADHD and compare them with non-ADHD control groups.

Method: From 1995 to 2005, clinically referred children and adolescents with the combined subtype of ADHD (n = 175) or the inattentive subtype of ADHD (n = 70) as diagnosed by the primary physician (using *DSM-IV* criteria) were compared with a non-ADHD psychiatric control group (n = 65) and a non-ADHD community control group (n = 72) on measures that assessed emotional symptoms, externalizing behavior problems, and aggression; comparisons were controlled for age, sex, and family income.

Results: Both ADHD groups had depressive symptom severity equal to a non-ADHD psychiatric control group and greater than community control groups. Externalizing behavior problems and aggression were more severe in the ADHD combined subtype group compared with other groups. As ADHD symptom severity increased, externalizing behavior problems and aggression, but not internalizing symptoms, also increased in severity. Family income had an independent relationship with externalizing disorders.

Conclusions: High rates of internalizing emotional symptoms, externalizing problem behaviors, and aggression were found in a clinical ADHD sample. Externalizing behavior problems and aggression appeared to be related to the hyperactive-impulsive ADHD symptom domain and to overall ADHD symptom severity. It remains an empirical question as to whether effective treatment of the core symptoms of ADHD will also reduce the presence of associated emotional and behavioral symptoms and improve daily functioning in children and adolescents with ADHD.

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Current criteria for attention-deficit/hyperactivity disorder (ADHD) do not require symptoms of emotional and behavioral dysregulation to be present for the diagnosis of ADHD to be met. However, the practicing clinician is often faced with the evaluation and management of symptoms of emotional and behavioral dysregulation that may or may not meet criteria for a comorbid psychiatric diagnosis when evaluating the child with ADHD. Such emotional and behavioral symptoms can complicate the clinical evaluation and management of ADHD.[1]

Early descriptions of ADHD contained references to emotional and behavioral dysregulation. Still (1902) observed that the most commonly observed and noteworthy attribute of the child with ADHD was "passion" or heightened emotionality, including aggression, defiance, lawlessness, cruelty, dishonesty, and spitefulness (in Barkley[2] pp 4–12).In 1972, Wender[3] proposed a theory of minimal brain dysfunction that consisted of 6 clusters of symptoms including emotion. Wender described increased mood lability, emotional reactivity, depression, anxiety, increased anger, and aggressive behavior and temper outbursts in children with ADHD. However, beginning in 1980, the *Diagnostic and Statistical Manual of Mental Disorders*, Third Edition (*DSM-III*) ADHD diagnostic criteria began to emphasize motor and cognitive components of the syndrome. Clinical research addressing the emotional components of ADHD diminished. Although comorbid psychiatric disorders have been much studied in ADHD,[4,5] less attention has focused on emotional and behavioral symptoms in ADHD.[6] This is unfortunate, as comorbid emotional and behavioral symptoms may influence prognosis and treatment in ADHD.[7]

The aim of this study is to describe emotional and behavioral symptoms in clinically referred children and adolescents (referred to henceforth as children) with ADHD and compare them with a non-ADHD psychiatry control group and a non-ADHD community control group using parent, teacher, and self-report as well as clinician rating scales. It was hypothesized that children with ADHD would have more internalizing symptoms than a non-ADHD community control group and more externalizing and aggressive symptoms than a non-ADHD psychiatry control group. It was further hypothesized that, as ADHD symptom severity increased, internalizing and externalizing symptoms would increase as well.

METHOD

Subject Characteristics

Patients with ADHD were consecutive referrals during the period from 1995 to 2005 to the pediatric psychopharmacology service at an academic hospital outpatient child and adolescent psychiatry clinic. Other than a diagnosis of ADHD, they were unselected for any characteristic or attribute. The sample included

Clinical Points

- Subthreshold comorbid internalizing (anxiety and depression) symptoms that do not rise to the level of diagnostic criteria are highly prevalent in referred children who meet diagnostic criteria for ADHD.
- Children referred for psychiatric treatment of ADHD have more severe problems with other disruptive behaviors, including aggression and delinquency, than children referred for treatment of internalizing disorders.
- Clinical evaluation and treatment planning with children and adolescents referred for ADHD should address not only the core ADHD symptoms of inattention, impulsivity, and hyperactivity but also a range of internalizing emotional symptoms and externalizing behavior and aggression problems.

245 patients with a diagnosis of ADHD by their primary physician. For the purposes of evaluation, patients with a diagnosis of ADHD hyperactive-impulsive (HI) subtype were combined with patients having a diagnosis of ADHD combined subtype, resulting in a group of 175 ADHD combined or HI (referred to as combined and possessing an ADHD-HI symptom component) patients and a group of 70 ADHD inattentive-subtype patients, without an ADHD-HI symptom component. Patients in this study ranged from 3 to 19 years old, with a mean (SD) age of 9.3 (2.9) years for the ADHD combined group and 11.8 (2.9) years for the ADHD inattentive group. Mean family income was between $40,000 and $49,000 per year. Females represented 25% of the total ADHD sample. Children with schizophrenia, autism, developmental delay, or pervasive developmental disorders were excluded.

The 2 ADHD groups were compared with 2 control groups. The psychiatric control group encompassed 65 consecutively referred children and adolescents with a non-ADHD, nonschizophrenic, non–developmental delay diagnosis, including 39 patients with depression, 9 with bipolar disorder, 52 with anxiety disorder (ie, social phobia, generalized anxiety disorder [GAD], and/or separation anxiety disorder), 15 with panic disorder, 18 with either obsessive-compulsive disorder (OCD) or posttraumatic disorder (PTSD), 4 with conduct disorder (CD), 20 with oppositional defiant disorder (ODD), and 11 with substance use disorder (SUD). The sum of the number of diagnoses is greater than 65 because many psychiatry control patients met criteria for more than 1 disorder. Their mean age (SD) was 12.8 (3.3) years, and their mean family income was between $40,000 and $49,000 per year. Females represented 39% of the psychiatry control group.

The community control group was free of psychiatric disorder and encompassed 72 children and adolescents recruited from the community by advertisement and word of mouth. Their mean age (SD) was 12.3 (3.3) years. Community controls had a higher mean family income, between $50,000 and $75,000 per year. Females represented 26% of the community control group.

All children assented and caregivers consented to all clinical procedures. The study was approved by the institutional review board.

Assessment and Measures

Lifetime *DSM-IV* diagnoses were based on the following assessments. First, a structured diagnostic interview was obtained through the caregiver's report using the Schedule for Affective Disorders and Schizophrenia for School Age Children-Epidemiologic Version 5 (K-SADS-E).[8] Previous research has demonstrated that the caregiver's report of childhood psychopathology shows excellent accuracy, specificity, reliability, and validity for ADHD, ODD, CD, depression, bipolar disorder, and anxiety disorders.[9] Second, a semistructured clinical assessment of the child, and, third, parent-, teacher-, and clinician-completed rating scales were also completed. A multidisciplinary team reviewed all data on the entire patient population to arrive at a best-estimate diagnosis.[10] Diagnoses were considered positive only if the full *DSM-IV* symptom criteria were met and associated with clinically meaningful impairment in the child's daily functioning. Five board-certified or board-eligible child and adolescent psychiatrists blind to the study aims and hypotheses conducted the interviews. Interrater reliability for diagnosis was assessed by the κ statistic[11] in a subsample of 53 children interviewed independently by 2 child psychiatrists. Interrater reliability was as follows: ADHD (κ = .85), CD (κ = 1.0), ODD (κ = 1.0), separation anxiety disorder (SAD) (κ = .92), panic disorder (κ = .89), social phobia (κ = .85), GAD (κ = .88), OCD (κ = 1.0), depression (κ = .84), and bipolar disorder (κ = .79). The interrater reliability for all diagnoses was κ = .87. The researchers followed the *DSM-IV* exclusion rules stating that, in the presence of CD, ODD is not diagnosed. Since the anxiety disorders encompass many different syndromes, and to increase statistical power, the designation of *anxiety disorders* was used to identify a generalized anxiety syndrome consisting of social phobia and/or separation anxiety disorder and/or GAD.

Psychopathology. Parents and teachers completed the Child Behavior Checklist (CBCL)/Parent Form and Teacher Report Form,[12] which is a well-validated, 113-item, general screen for child and adolescent psychopathology. Comorbid symptoms were assessed using *T*-scores for the Internalizing Scale (withdrawn, psychosomatic, anxious/depressed syndrome scales) and the Externalizing Scale (delinquency, aggression syndrome scales). For this study, the 3 intermediate CBCL scales including social, thought, and attention problems were not used.

Child report depression. The Child Depression Inventory (CDI)[13] is a 27-item reliable and validated self-report form assessing depressive symptoms in children and adolescents. Items are rated for the past 2 weeks as 0 (absence of symptom), 1 (mild symptom), or 2 (definite symptom) with a total possible score range of 0 to 54.

ADHD symptom severity. To assess severity of ADHD, the total symptom counts from the ADHD Rating Scale IV (ADHD-RS-IV) were used.[14] The ADHD-RS-IV, a reliable and valid measure, lists the 18 ADHD symptoms from the *DSM-IV*, is scored on a 0-to-3 scale (total possible score = 54), and was completed by parents.

Overt aggression. Overt aggression was assessed using the parent-completed Modified Overt Aggression Scale,[15] which assesses the frequency and intensity of verbal threats, explosive property destruction, self-injurious behavior (SIB), and physical assault over the week previous to evaluation (total possible score = 240).

Proactive and reactive aggression. Proactive aggression and reactive aggression were assessed using the Proactive/Reactive Rating Scale.[16] This reliable and validated rating scale consists of 3 questions that evaluate reactive aggression and 3 questions that evaluate proactive aggression. An example of a reactive aggression question is "When this child has been teased or threatened, he or she gets angry easily and strikes back." An example of a proactive aggression statement is "This child uses physical force in order to dominate other kids." Items use a 1- to 5-point scale, ranging from never to almost always (total possible score for each aggression type = 15).

Hostility. The Buss Durkee Hostility Inventory Child Version was used to assess hostile attributions. This scale yields an Expressed Hostility factor and a Perceived Hostility factor. For this study, the reliable and validated Expressed Hostility score was used (range, 0–13).[17]

Functional impairment. Similar to Axis V Global Assessment of Functioning of the *DSM-IV* for adults, the Children's Global Assessment Scale (CGAS)[18] measures daily impairment and global functioning for children and adolescents on a 0- to 100-point scale; high scores indicate better functioning and lower scores indicate poorer functioning (impairment).

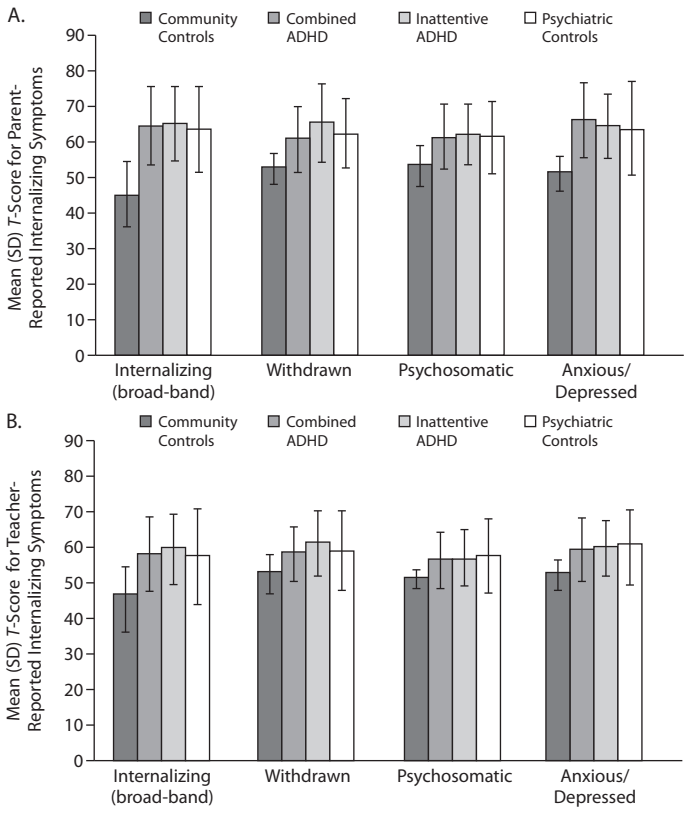
Global symptom severity. Global symptom severity was assessed by the clinician using all available information at the time of evaluation and coded on the Clinical Global Impressions (CGI)-Severity Scale.[19] The CGI is a 7-point rating scale that ranges from (1) no signs of illness to (4) moderately ill to (7) extremely ill.

Statistical Analysis

To test the first hypothesis, the dependent measures were grouped to represent 3 symptom types (ie, internalizing emotional symptoms, externalizing behavioral symptoms, aggression) and a fourth subset representing functional impairment. The independent variable for the analyses was based on 2 ADHD diagnostic groups (combined HI and inattentive) and 2 control groups (psychiatric controls and community controls). Multivariate analyses of covariance (MANCOVAs) were conducted comparing both ADHD groups with both control groups. Age, sex, and family income were included as covariates. When the overall *F* indicated a significant between-groups difference on analyses involving an independent variable with more than 2 levels, post hoc analyses using Scheffé tests ($P < .05$) were conducted separately for each dependent variable for which there was a significant univariate between-groups difference.

To test the second hypothesis, that increasing ADHD symptom severity would be associated with increasing severity of emotional and behavioral symptoms, bivariate Pearson correlations were conducted.

Figure 1. Mean (SD) *T*-Scores for (A) Parent-Reported and (B) Teacher-Reported CBCL Internalizing Symptoms



Abbreviations: ADHD = attention-deficit/hyperactivity disorder, CBCL = Child Behavior Checklist.

RESULTS

Internalizing Symptoms

The CDI and the parent- and teacher-report CBCL internalizing scales—including the broad-band internalizing *T*-score and the withdrawn, somatic problems, and anxious-depressed syndrome *T*-scores—were used to investigate internalizing symptoms (Figure 1A and 1B). The overall MANCOVA was significant: $F_{18,820} = 9.55$, $P < .001$. *F* test results for individual parent and teacher scores were statistically significant ($P \leq .001$): $F_{3,371} = 63.15$ and $F_{3,306} = 15.43$ for internalizing *T*-score, respectively; $F_{3,371} = 27.11$

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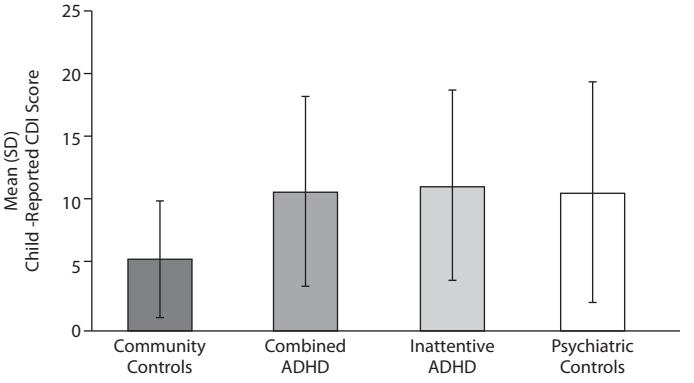
and $F_{3,306} = 9.24$ for withdrawn; $F_{3,371} = 17.72$ and $F_{3,306} = 6.47$ for psychosomatic; and $F_{3,370} = 36.7$ and $F_{3,307} = 8.30$ for anxious/depressed. The F test result for the child-reported CDI was $F_{3,330} = 10.15$ (Figure 2). Post hoc Scheffé analyses revealed that the ADHD and psychiatric control groups had equally severe internalizing symptoms that were significantly ($P < .05$) more severe than the internalizing symptoms reported on all measures for the community control group. Age was generally unrelated to internalizing variables when entered as a covariate in the multivariate model (ie, statistically significantly associated with only 1 of the 8 variables). Female sex and lower family income were associated with higher parent, but not teacher, ratings of internalizing problems, particularly somatic complaints.

Figure 2. Mean (SD) Child Self-Reported CDI Scores

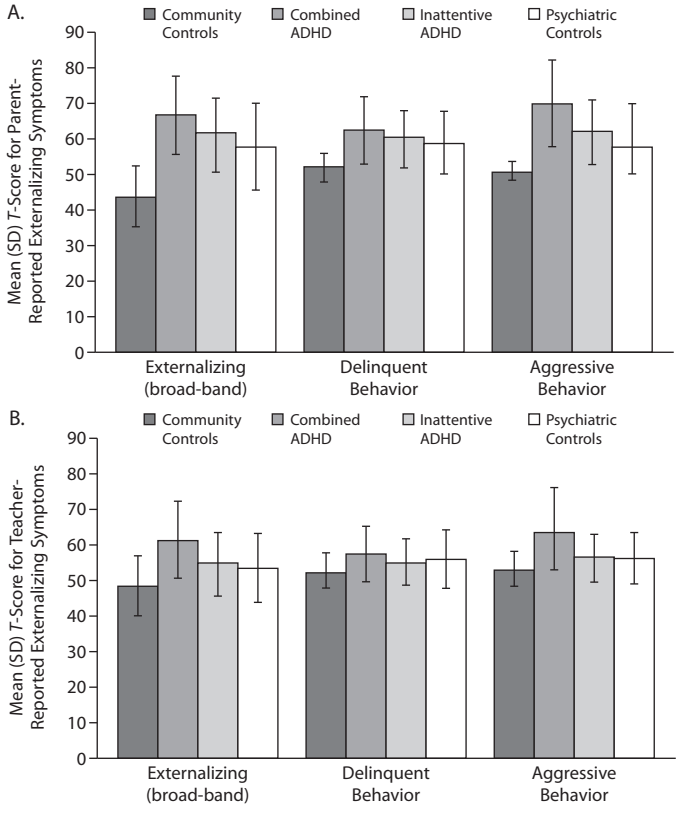


Abbreviations: ADHD = attention-deficit/hyperactivity disorder, CDI = Child Depression Inventory.

Externalizing Behavior Symptoms and Aggression

The parent- and teacher-report CBCL externalizing scales—including the broad-band externalizing T-score and the delinquency and aggression syndrome T-scores—were used to investigate externalizing psychopathology (Figure 3A and 3B). The overall MANCOVA was significant: $F_{18,824} = 11.23$, $P < .001$. F test results for individual parent and teacher scores were statistically significant ($P \leq .001$): $F_{3,371} = 84.12$ and $F_{3,306} = 21.88$ for externalizing T-score, respectively; $F_{3,367} = 27.27$ and $F_{3,303} = 5.48$ for delinquent behavior; and $F_{3,371} = 64.12$ and $F_{3,304} = 23.21$ for aggressive behavior. Post hoc Scheffé analyses revealed that the combined ADHD group, which includes the HI symptom domain, had significantly ($P < .05$) higher externalizing behavior symptom scores than the other groups.

Figure 3. Mean (SD) *T*-Scores for (A) Parent-Reported and (B) Teacher-Reported CBCL Externalizing Symptoms



Abbreviations: ADHD = attention-deficit/hyperactivity disorder, CBCL = Child Behavior Checklist.

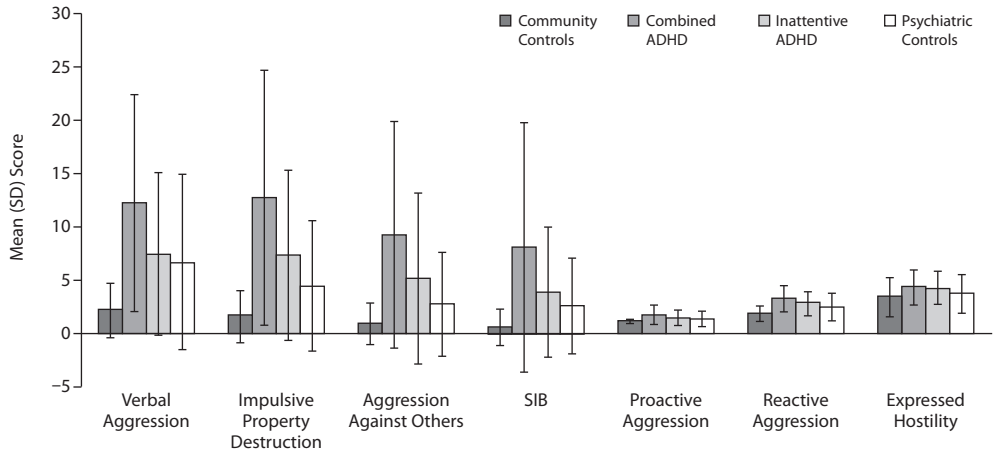
The overt aggression (verbal threats, impulsive property destruction, SIBs, and fighting), hostility, and proactive/reactive aggression scores were used to investigate problematic aggression (Figure 4). The overall MANCOVA was significant: $F_{24,837} = 13.0$, $P < .001$. F test results for individual dependent variables were statistically significant ($P \leq .001$): $F_{3,347} = 25.70$ for verbal aggression, $F_{3,347} = 28.80$ for impulsive property destruction, $F_{3,347} = 20.92$ for aggression against others, $F_{3,347} = 15.13$ for SIB, $F_{3,346} = 13.97$ for proactive aggression, $F_{3,346} = 30.39$ for reactive aggression, and $F_{3,305} = 5.64$ for expressed hostility. Post hoc Scheffé analyses revealed that the ADHD combined group scored significantly ($P < .05$) higher than all other groups on all aggression variables, except on reactive aggression, for which the combined ADHD and inattentive groups' scores were comparable (Figure 4).

Older age was associated with more severe parent- and teacher-rated delinquency problems. Sex was generally unrelated to the disruptive behavior variables. Lower family income was statistically significantly associated ($P < .05$) with more severe disruptive behavior and aggression problems on all parent- and teacher-rated measures.

Symptom Severity and Clinical Impairment

The overall MANCOVA for the CGAS and CGI was significant: $F_{21,813} = 5.26$, $P < .001$. F test results for individual dependent variables were statistically significant ($P \leq .001$): $F_{3,388} = 232.78$ for the CGAS; $F_{3,388} = 15.23$ for the CGI.

Figure 4. Mean (SD) Scores on Child Overt, Proactive, and Reactive Aggression and Child Hostility Rating Scales



Abbreviations: ADHD = attention-deficit/hyperactivity disorder, SIB = self-injurious behavior.

Table 1. Correlations Between Parent-Rated ADHD-RS-IV Symptom Severity and Parent and Teacher Measures of CBCL Internalizing and Externalizing Behaviors

	Teacher		Parent	
Variable	*r*	*P*	*r*	*P*
Internalizing *T*-score	0.055	NS	0.217	.001
Withdrawn	−0.014	NS	0.070	NS
Anxious-depressed	0.080	NS	0.241	< .001
Psychosomatic problems	−0.123	NS	0.069	NS
Externalizing *T*-score	0.238	.001	0.352	< .001
Delinquent problems	0.138	NS	0.271	< .001
Aggressive problems	0.215	.002	0.354	< .001

Abbreviations: ADHD-RS-IV = Attention-Deficit/Hyperactivity Disorder Rating Scale IV, CBCL = Child Behavior Checklist, NS = not significant ($P > .05$).

Post hoc analyses revealed that the ADHD combined group was rated as more severely impaired than the other groups and that the ADHD inattentive group was rated as more severely impaired than either of the control groups. In the multivariate model, neither age nor sex was statistically significantly associated with CGAS or CGI score, but lower family income was associated with poorer functioning on both indexes (ie, lower CGAS score, higher CGI score).

Correlations

Correlations of the ADHD-RS-IV score were more consistently statistically significant and generally higher for externalizing CBCL behavior problems than for CBCL internalizing symptoms (Table 1). As parent-rated ADHD symptom severity increased, externalizing behavior problems rated by parents or teachers also increased, especially for the CBCL aggressive problems syndrome. Teacher-rated CBCL internalizing scores were unrelated to parent-rated ADHD symptom severity, but parent-rated overall internalizing and depression/anxiety scores were correlated with parent-rated ADHD symptoms.

DISCUSSION

This study is the first, to our knowledge, to empirically demonstrate that children and adolescents referred for treatment for ADHD view themselves, and are viewed by their parents and teachers, as displaying internalizing emotional symptoms as severe as those of children who are referred for treatment of affective and anxiety disorders. Additionally, as expected, the referred children with ADHD were rated as having more severe externalizing behavioral and aggression problems and poorer overall psychosocial functioning than children referred for the treatment of affective and anxiety disorders. Thus, clinical evaluation and treatment planning with children and adolescents referred for ADHD should address not only the core ADHD symptoms of inattention, impulsivity, and hyperactivity but also a range of internalizing emotional symptoms and externalizing behavior and aggression problems.

Since parents and children have a low agreement on the presence of depressive symptoms,[20] and teachers also may differ from both parents and children in their perceptions of depressive symptoms, child self-report and teacher-report measures of depressive symptoms were used to confirm that there were high rates of depressive and internalizing symptoms in children and adolescents with ADHD. Given that depression and anxiety disorders were highly represented in the psychiatric control group and that the internalizing symptoms of the children with ADHD were substantially more severe than those of the community controls, this evidence suggests that emotional symptoms are common and clinically significant among children referred for ADHD treatment. The findings of the current study are in agreement with previous research that reported high rates of depressive symptoms in children with ADHD[6] and also show that depressive symptoms are similar in severity to

those of clinically referred psychiatric controls who present with internalizing psychiatric disorders.

Although the comorbidity of ADHD with CD and ODD[7] and with antisocial behavior[21] has been extensively investigated, the relationship between ADHD subtypes and aggression subtypes, such as overt aggression, proactive aggression, and reactive aggression and hostility, is less well studied. The study of aggression independent of disruptive behavior disorder diagnoses is important, as clinical research has suggested that aggressive behaviors may drive clinical referral and use of medication therapies in ADHD.[22] Indeed, 44% of aggressive ADHD children identified in the Multimodal Treatment Study of Children With Attention-Deficit/Hyperactivity Disorder (MTA) study remained aggressive despite treatment for ADHD.[23]

The results of the present study suggest that high rates of overt aggression, including parent-rated verbal aggression, impulsive acts of property destruction, SIBs, physical fighting, and expressed hostility, are common in clinically referred children and adolescents with ADHD, especially in the combined ADHD group characterized by hyperactive-impulsive symptoms. The combined ADHD group demonstrated higher scores on proactive aggression than the other groups and higher rates of reactive aggression than community controls. Previous research has suggested that the hyperactive-impulsive symptom elements within the core symptom domain of ADHD drive the risk of aggression. For example, Taylor et al[24] postulated a developmental model in which early-onset and pervasive hyperactivity was a risk factor for the eventual development of CD that then predicted negative social outcomes including risk of aggression. Impulsive responding, identified as an inability to delay responding without adequate assessment of context, is also associated with aggression in the context of many psychiatric disorders, including ADHD.[25] Within the limitations of this single-site cross-sectional study, the results support the idea that hyperactivity-impulsivity drives aggression in the clinical presentation of referred children with ADHD.

Self-injurious behavior is defined as the deliberate, direct destruction of bodily tissue in the absence of suicidal intent,[26] defined in this study as skin picking; hitting oneself; head banging; or cutting, burning, or bruising of the self,[27] and is correlated with other aggressive behaviors.[28] Self-injurious behavior is not well studied in children and adolescents with ADHD. A recent study of Japanese junior high school students assessed by questionnaire suggests a relationship between hyperactivity and deliberate self-harm.[29] It was reported that ADHD is associated with SIB in this clinical sample, especially in the combined ADHD group. Self-injurious behavior may occur because of low frustration tolerance in the child with ADHD or as a means of managing negative internal emotional states.[28]

In addition, as ADHD symptom severity increased, the severity of associated emotional and behavioral symptoms also increased, with the exception of teacher-rated internalizing symptoms. The results of this analysis are in line with findings from Sobanski et al,[30] who found emotional and behavioral symptoms in a large proportion of children and adolescents with ADHD, with a higher degree of emotional symptoms in subjects with more severe ADHD. Thus, it is not only the diagnosis of ADHD but also the severity of ADHD core symptoms that is associated with the severity of externalizing symptoms and possibly also internalizing symptoms. Considerations of emotional inhibition and self-regulation deficits as possible core symptoms of ADHD may provide a more complete understanding of the impact of ADHD on daily life[31] and guide clinician assessments of treatment efficacy (ie, symptom remission). The relationship between parent-rated ADHD severity and externalizing problems may be, in part, an artifact of having the same rater make both ratings (eg, a global problem severity rating rather than a specific symptom domain rating). However, it also is possible that parents recognize the often subtler signs of emotional distress that may be more difficult for teachers to discern than the more observable characteristics of child externalizing behaviors.[20]

This discussion should be placed within the context of the study limitations. The methodology is cross-sectional and correlational in nature, and, thus, causality should not be inferred. Data are accrued from a single clinical site and may not be representative of all children with ADHD. The patients were from mostly middle- and upper-middle-class families, and results may not be representative of children with ADHD from other socioeconomic status groups. The importance of testing these relationships with children whose families have limited socioeconomic means is underscored by the finding that, even within this somewhat restricted socioeconomic sample, after controlling for the effects of age, sex, and ADHD problem severity, family income was associated with every measure of teacher- and parent-rated externalizing problems and psychosocial impairment. Thus, the potentially adverse effects of lower family income warrant equal consideration clinically with ADHD problem severity in clinical assessment and treatment planning to address ADHD-referred children's disruptive behavior problems.

CONCLUSIONS

These results show that the clinician is faced with high rates of internalizing emotional symptoms, externalizing problem behaviors, and aggression in the evaluation and treatment of clinically referred children with ADHD. The associated symptoms and behaviors occur in the combined subtype of ADHD with an HI component as well as in the inattentive subtype of ADHD. Although these symptoms may not rise to the level of satisfying criteria for a formal comorbid psychiatric diagnosis, they require clinical evaluation and may complicate treatment planning and assessments of symptom remission in children and adolescents with ADHD. As ADHD symptom severity rises, rates of aggressive and delinquent behaviors also increase, especially in ADHD groups with an HI symptom domain. Rates of depressive

and anxious symptoms in the ADHD groups in this study were not different from those found for clinically referred children with internalizing psychiatric disorders.

The present study's findings suggest that internalizing symptoms reflective of emotional distress and externalizing behavior problems such as aggression and delinquency should be considered when assessing improvement in the treatment of ADHD symptoms and ultimately making a diagnosis of symptom remission. Even when ADHD symptoms are improved in treatment, continuing problems with anxiety or depression and aggression or delinquency may seriously compromise the referred child's psychosocial functioning. Addressing those internalizing and externalizing problems with evidence-based assessments and interventions should therefore be considered with children referred for ADHD treatment even if those comorbid problems are not specifically identified in the referral or if they do not rise to the level of severity warranting additional psychiatric diagnoses. It remains an empirical question as to whether effective treatment of the core symptoms of ADHD will also reduce the presence of associated emotional and behavioral symptoms and improve daily functioning in children and adolescents with ADHD. Such research would be of great benefit to the practicing clinician.

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Editor's Note: We encourage authors to submit papers for consideration as a part of our Focus on Childhood and Adolescent Mental Health section. Please contact Karen D. Wagner, MD, PhD, at kwagner@psychiatrist.com.

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