

Psychiatric Comorbidity, Family Dysfunction, and Social Impairment in Referred Youth With Oppositional Defiant Disorder

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Objective: The authors sought to achieve an improved understanding of the diagnosis of oppositional defiant disorder independent of its association with conduct disorder.

Method: Family interactions, social functioning, and psychiatric comorbidity were compared in clinically referred male and female subjects with oppositional defiant disorder alone (N=643) or with comorbid conduct disorder (N=262) and a psychiatric comparison group with neither oppositional defiant disorder nor conduct disorder (N=695).

Results: Oppositional defiant disorder youth with or without conduct disorder were found to have significantly higher rates of comorbid psychiatric disorders and significantly greater family and social

dysfunction relative to psychiatric comparison subjects. Differences between subjects with oppositional defiant disorder alone and those with comorbid conduct disorder were seen primarily in rates of mood disorders and social impairment. Oppositional defiant disorder was a significant correlate of adverse family and social outcomes when comorbid disorders (including conduct disorder) were controlled.

Conclusions: These results support the validity of the oppositional defiant disorder diagnosis as a meaningful clinical entity independent of conduct disorder and highlight the extremely detrimental effects of oppositional defiant disorder on multiple domains of functioning in children and adolescents.

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Oppositional defiant disorder refers to a recurrent pattern of developmentally inappropriate levels of negativistic, defiant, disobedient, and hostile behavior toward authority figures. The behaviors associated with oppositional defiant disorder—including actively defying or refusing to comply with adult rules and requests, frequent temper outbursts, and excessive arguing—can significantly impede adaptive adult-child and child-peer interactions (1–7). Indeed, parents of children with oppositional defiant disorder are more likely to utilize child mental health services than parents of children with other disruptive behavior disorders (8).

Despite its clinical relevance, surprisingly little is known about oppositional defiant disorder. This may be due, in part, to a tendency to view oppositional defiant disorder simply as a variant of conduct disorder (9, 10). Indeed, most studies on disruptive behavior disorders have combined children with oppositional defiant disorder and conduct disorder into a single generic category, often called “conduct problems” (11, 12). It has been argued that this practice has contributed to obscured findings and conclusions that are difficult to interpret (10).

Certainly a clear overlap has been established between conduct disorder and oppositional defiant disorder (6, 10–13), and there is evidence to suggest that oppositional de-

fiant disorder precedes conduct disorder in a substantial percentage of cases (14). However, the majority of children with oppositional defiant disorder do not have conduct disorder (11), and many children with oppositional defiant disorder exhibit ongoing oppositional behavior without ever developing conduct disorder (11, 15). Indeed, we have previously shown that subsequent diagnoses of conduct disorder in youth with oppositional defiant disorder are quite infrequent beyond age 6 (11).

An improved understanding of oppositional defiant disorder therefore requires examination of the clinical correlates of the disorder independent of its association with conduct disorder. Such information can strengthen our understanding of oppositional defiant disorder as a meaningful nosological entity and lead to improved treatment approaches aimed at ameliorating the disorder. Toward this end, the purpose of this study was to determine the clinical significance of oppositional defiant disorder alone (i.e., independent of conduct disorder) by examining family interactions, social functioning, and psychiatric comorbidity in a group of clinically referred children with oppositional defiant disorder, either alone or with comorbid conduct disorder, and a group of children with neither disorder.

Method

Study Group

The subjects were 1,600 children and adolescents (mean age=10.7 years) referred to the child psychiatry service at Massachusetts General Hospital. There were 643 youth (468 boys, 175 girls) with oppositional defiant disorder alone, 262 youth (210 boys, 52 girls) with oppositional defiant disorder plus conduct disorder, and 695 psychiatric comparison subjects (487 boys, 208 girls) with neither oppositional defiant disorder nor conduct disorder. Although all children and adolescents were referred for clinical care, they were not selected for any specific psychiatric condition. There was also no selection based on social class or insurance restrictions. This study received institutional review board approval to review, analyze, and report anonymously on these subjects.

Assessment Procedures

DSM-III-R diagnoses were obtained through maternal report by using the Schedule for Affective Disorders and Schizophrenia for School-Age Children—Epidemiologic Version (16). All assessments were conducted by carefully supervised research assistants who were trained to high levels of interrater reliability. Kappa coefficients of agreement were computed between these raters and experienced, board-certified child and adult psychiatrists who listened to audiotaped recordings of randomly selected interviews. Based on 61 interviews, the mean kappa was 0.90; all diagnoses had kappas higher than 0.82. Diagnoses were considered positive if, on the basis of interview results, full DSM-III-R criteria were unequivocally met. All diagnostic uncertainties were resolved by a committee of board-certified child psychiatrists who were blind to all nondiagnostic data (e.g., socioeconomic status, family and social functioning). A diagnosis of depression was made only if the depressive episode was associated with marked impairment (17). Since the anxiety disorders comprise many syndromes with a wide range of severity, we used the designation “multiple anxiety disorders” (two or more anxiety disorders) to define a relatively severe anxiety syndrome (18). Rates of disorders reported here represent lifetime prevalence.

In addition to diagnostic information, interviewers also assessed adaptive functioning by using the DSM-III-R Global Assessment of Functioning Scale, which yields a composite rating of a child's global functioning on a scale ranging from 1 (worst) to 90 (best). Global Assessment of Functioning Scale scores were assigned to each participant on the basis of information obtained in the diagnostic interview; scores were also reviewed by the committee. Socioeconomic status was established by using categories delineated by Hollingshead and was available for 1,261 participants (oppositional defiant disorder alone: N=512, oppositional defiant disorder plus conduct disorder: N=218, psychiatric comparison group: N=531).

Social functioning was assessed by using the Social Adjustment Inventory for Children and Adolescents (19). This 76-item instrument consists of 12 subscales that assess social difficulties at school and in interactions with peers, siblings, and parents. (For the present study, two subscales related to interactions with the opposite sex were excluded from data analyses.) The Social Adjustment Inventory for Children and Adolescents was administered in interview format to mothers, who rated each item on a 4-point scale. Using the same scale, interviewers then assigned a global rating score for each subscale to summarize maternal ratings on individual item scores within each content area. A total score was then calculated as the arithmetic mean of all subscale scores. Previous studies have provided evidence of the concurrent and discriminant validity of this instrument (19–22) as well as its interrater reliability and internal consistency (23). Data from the Social Adjustment Inventory for Children and Adolescents were available for 715 participants (oppositional defiant disorder

alone: N=297, oppositional defiant disorder plus conduct disorder: N=111, psychiatric comparison group: N=307).

Mothers also provided information regarding family interactions through completion of the relationship dimensions of the Family Environment Scale (24). The relationship dimensions consist of 27 true/false items that assess the quality of interpersonal relationships among family members in three domains: cohesion (the degree of commitment, help, and support provided by family members to one another), expressiveness (the extent to which family members are encouraged to act openly and express feelings directly), and conflict (the amount of openly expressed anger, aggression, and conflict among family members). Data from the Family Environment Scale were available for 668 participants (oppositional defiant disorder alone: N=283, oppositional defiant disorder plus conduct disorder: N=106, psychiatric comparison group: N=279). Statistical significance was defined at the 0.01 level.

Results

Demographic and Clinical Characteristics

As shown in Table 1, the three groups were not significantly different in age but were different in terms of socioeconomic status. Pairwise comparisons showed that the socioeconomic status of both oppositional defiant disorder groups was significantly lower than that of the psychiatric comparison subjects, and the socioeconomic status of youth with oppositional defiant disorder and conduct disorder was significantly lower than that of those with oppositional defiant disorder alone. Male representation among youth with oppositional defiant disorder and conduct disorder was somewhat greater than among youth with oppositional defiant disorder alone and was significantly greater than that of the psychiatric comparison subjects. (In view of these findings, socioeconomic status and gender were included as covariates in all analyses examining differences among the three groups.) While rates of repeated grade and remedial assistance did not differ among the three groups, the likelihood of placement in special classes did. Pairwise comparisons revealed that youth in both oppositional defiant disorder groups had a significantly greater likelihood of placement in special classes at school than did psychiatric comparison subjects, and youth with oppositional defiant disorder and conduct disorder also had significantly higher rates of such placements than did youth with oppositional defiant disorder alone.

As shown in Figure 1, oppositional defiant disorder youth with or without conduct disorder had significantly higher rates of attention deficit hyperactivity disorder (ADHD), major depression, bipolar disorder, and multiple anxiety disorders than did psychiatric comparison subjects. In addition, youth with oppositional defiant disorder and conduct disorder had significantly higher rates of severe major depression and bipolar disorder than did youth with oppositional defiant disorder alone; no other significant differences were found. Substantial rates of oppositional defiant disorder, either alone or with comor-

TABLE 1. Demographic Characteristics, Academic Performance, and Adaptive and Social Functioning of Youth With Oppositional Defiant Disorder, Alone or With Comorbid Conduct Disorder, and Clinically Referred Youth With Neither Oppositional Defiant Disorder Nor Conduct Disorder

Variable	Patient Group						Significant Pairwise Comparisons ^a					
	1: Oppositional Defiant Disorder Without Conduct Disorder (N=643)		2: Oppositional Defiant Disorder With Conduct Disorder (N=262)		3: Psychiatric Comparison Subjects (N=695)		1 Versus 3		2 Versus 3		1 Versus 2	
	Mean	SD	Mean	SD	Mean	SD	z	p	z	p	z	p
	N	%	N	%	N	%	z	p	z	p	z	p
Age (years)	10.6	3.4	10.8	3.7	10.7	3.5						
Socioeconomic status ^b	2.0	1.1	2.4	1.2	1.8	0.9	-2.81	<0.01	-6.67	<0.01	-4.47	<0.01
Male ^c	468	72.8	210	80.2	487	70.1			9.77	<0.01		
Academic performance												
Repeated grade	118	18.4	56	21.4	141	20.3						
Special class placement ^d	179	27.8	109	41.6	139	20.0	-2.87	<0.01	-5.43	<0.01	-3.21	<0.01
Need for remedial tutoring	351	54.6	139	53.1	388	55.8						
Adaptive and social functioning	Mean	SD	Mean	SD	Mean	SD	t	p	t	p	t	p
DSM-III-R Global Assessment of Functioning Scale, worst lifetime score ^e	49.3	7.5	43.9	7.2	54.1	7.5	9.94	<0.01	18.01	<0.01	10.57	<0.01
Social Adjustment Inventory for Children and Adolescents, total score ^f	3.7	5.0	26.6	5.0	19.7	4.8	-6.01	<0.01	-10.97	<0.01	-5.01	<0.01

^a Performed for variables in which a significant difference among groups was found.

^b Significant difference among groups (Kruskal-Wallis $\chi^2=39.44$, $df=2$, $p<0.01$).

^c Significant difference among groups (Pearson's $\chi^2=9.77$, $df=2$, $p<0.01$). Pearson's chi-square analysis was also used for the pairwise comparison.

^d Significant difference among groups determined by logistic regression model analyses that controlled for socioeconomic status and gender ($\chi^2=29.66$, $df=2$, $p<0.01$).

^e Significant difference among groups determined by linear regression model analyses that controlled for socioeconomic status and gender ($F=167.46$, $df=2$, 1256, $p<0.01$).

^f Significant difference among groups determined by linear regression model analyses that controlled for socioeconomic status and gender ($F=68.37$, $df=2$, 540, $p<0.01$).

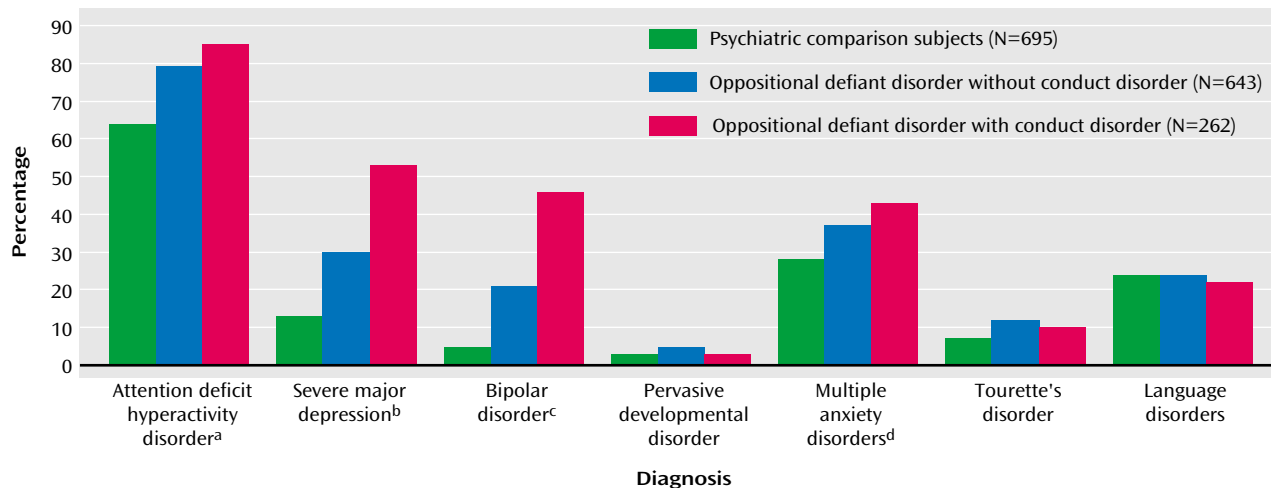
bid conduct disorder, were found within other psychiatric disorders as well (Figure 2).

With regard to adaptive and social functioning, oppositional defiant disorder youth with or without conduct disorder evidenced significantly greater impairment (relative to those with neither disorder) on the Global Assessment of Functioning Scale and the Social Adjustment Inventory for Children and Adolescents total score (Table 1) as well as in almost all domains of social functioning (Figure 3). Oppositional defiant disorder youth with conduct disorder had significantly lower scores than did those without conduct disorder on the Global Assessment of Functioning Scale and on the Social Adjustment Inventory for Children and Adolescents subscales that assessed social difficulties at school, spare-time problems, and problems in interactions with peers, siblings, and parents. Oppositional defiant disorder subjects with or without conduct disorder exhibited significantly greater impairment in family functioning than did subjects with neither disorder on the cohesion and conflict domains of the Family Environment Scale (Figure 4). No differences emerged between youth with oppositional defiant disorder alone and those with comorbid conduct disorder in any domains of family functioning.

Contribution of Oppositional Defiant Disorder, Comorbid Conditions, and Demographic Characteristics to Social and Family Functioning

We next sought to disentangle the high rates of comorbidity within oppositional defiant disorder and its overlap with conduct disorder by examining the association between oppositional defiant disorder and both social impairment and family dysfunction while we controlled for conduct disorder and other disorders. Toward this end, we used linear and logistic regression models to determine the association between oppositional defiant disorder and social and family outcomes after we controlled for conduct disorder, ADHD, bipolar disorder, major depression, multiple anxiety disorders, language impairment, pervasive developmental disorder, Tourette's disorder, socioeconomic status, gender, and age. We first examined these variables with regard to global indices of social functioning (the Social Adjustment Inventory for Children and Adolescents total score) and family functioning (the combined sum of the three Family Environment Scale subscales, with scaling on the conflict subscale reversed [lower scores now representing poorer functioning] so as to achieve uniformity with the other two subscales). As seen in Table 2 and Table 3, both overall models were significant. For the Social Adjust-

FIGURE 1. Psychiatric Diagnoses in Youth With Oppositional Defiant Disorder, Alone or With Comorbid Conduct Disorder, and Clinically Referred Youth With Neither Oppositional Defiant Disorder Nor Conduct Disorder



^a Significant difference among groups determined by logistic regression analysis that controlled for socioeconomic status and gender ($\chi^2=40.22$, $df=2$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, higher rates were seen in youth with oppositional defiant disorder alone ($z=-5.14$, $p<0.01$) or with comorbid conduct disorder ($z=-4.98$, $p<0.01$).

^b Significant difference among groups determined by logistic regression analysis that controlled for socioeconomic status and gender ($\chi^2=122.46$, $df=2$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, higher rates were seen in youth with oppositional defiant disorder alone ($z=-6.01$, $p<0.01$) or with comorbid conduct disorder ($z=-11.06$, $p<0.01$). The rates of the two oppositional defiant disorder groups also significantly differed ($z=-6.77$, $p<0.01$).

^c Significant difference among groups determined by logistic regression analysis that controlled for socioeconomic status and gender ($\chi^2=128.60$, $df=2$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, higher rates were seen in youth with oppositional defiant disorder alone ($z=-6.20$, $p<0.01$) or with comorbid conduct disorder ($z=-11.12$, $p<0.01$). The rates of the two oppositional defiant disorder groups also significantly differed ($z=-7.07$, $p<0.01$).

^d Significant difference among groups determined by logistic regression analysis that controlled for socioeconomic status and gender ($\chi^2=21.08$, $df=2$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, higher rates were seen in youth with oppositional defiant disorder alone ($z=-2.93$, $p<0.01$) or with comorbid conduct disorder ($z=-4.45$, $p<0.01$).

ment Inventory for Children and Adolescents total score, oppositional defiant disorder, conduct disorder, language impairment, pervasive developmental disorder, and age emerged as significant predictors; major depression was a borderline significant predictor. For the Family Environment Scale total score, oppositional defiant disorder, socioeconomic status, and age emerged as significant predictors and multiple anxiety disorders emerged as a borderline significant predictor.

To determine whether specific dimensions of family and social functioning were accounted for by unique predictors, we entered the same predictors into separate regression models for the four problem subscales of the Social Adjustment Inventory for Children and Adolescents (Table 2) and the three Family Environment Scale subscales (Table 3). All models were significant. Oppositional defiant disorder, ADHD, and major depression emerged as significant predictors of social problems at school, with conduct disorder and age emerging as borderline significant predictors. On the problems with peers subscale, oppositional defiant disorder, conduct disorder, language impairment, and pervasive developmental disorder emerged as significant predictors, with socioeconomic status emerging as a borderline significant predictor. On the problems with siblings subscale, oppositional defiant disorder and conduct disorder were the only significant predictors; bipolar disorder

was a borderline significant predictor. Finally, on the problems with parents subscale, oppositional defiant disorder and conduct disorder were the only significant predictors, with ADHD, bipolar disorder, and major depression emerging as borderline significant predictors (Table 2). For the Family Environment Scale subscales (Table 3), oppositional defiant disorder emerged as the only significant predictor of family conflict, and oppositional defiant disorder, age, and socioeconomic status were the only significant predictors of family cohesion. Socioeconomic status and multiple anxiety disorders emerged as significant predictors on the family expressiveness subscale, with oppositional defiant disorder and bipolar disorder emerging as borderline significant predictors.

Discussion

In a carefully diagnosed, large, well-defined group of clinically referred youth, we found that the diagnosis of oppositional defiant disorder was associated with significantly higher rates of comorbid disorders, greater social impairment, and greater family dysfunction when compared with a group of clinically referred youth with neither oppositional defiant disorder nor conduct disorder. Specifically, we found that youth with oppositional defiant disorder, either with or without conduct disorder, had sig-

FIGURE 2. Oppositional Defiant Disorder, Alone or With Comorbid Conduct Disorder, in Clinically Referred Youth With Other Psychiatric Diagnoses

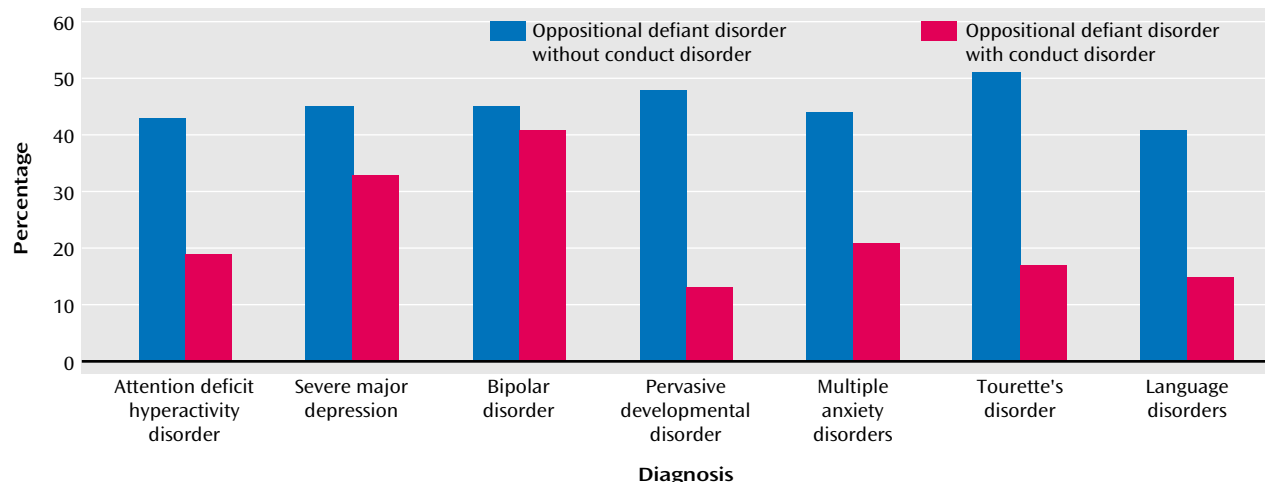
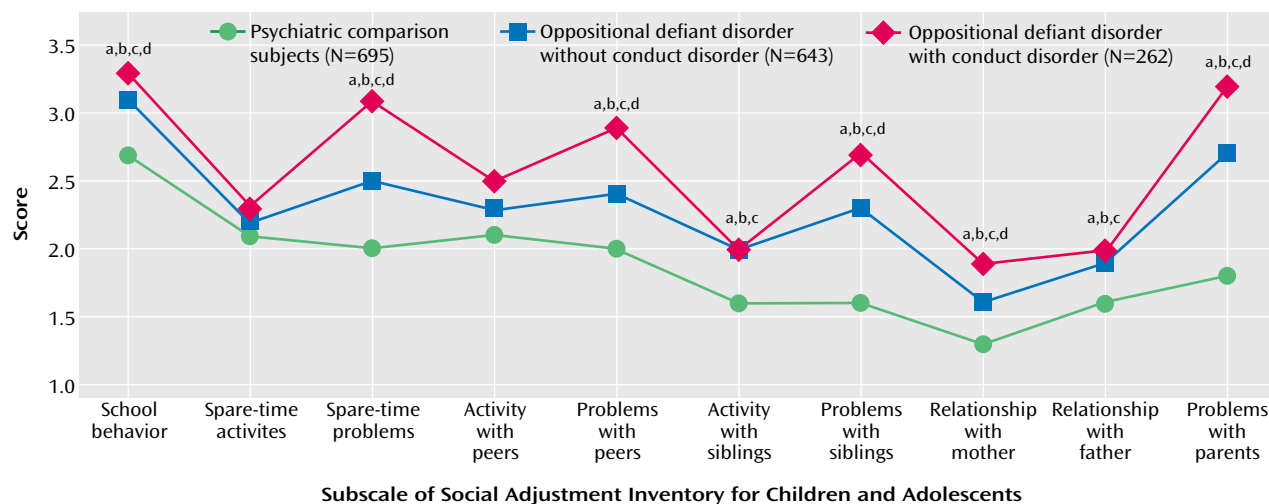


FIGURE 3. Social Functioning in Youth With Oppositional Defiant Disorder, Alone or With Comorbid Conduct Disorder, and Clinically Referred Youth With Neither Oppositional Defiant Disorder Nor Conduct Disorder



- ^a Significant difference among groups determined by linear regression analysis that controlled for socioeconomic status and gender ($F=10.28-120.51$, $df=2, 457-540$, $p<0.01$).
- ^b Pairwise comparisons revealed a significant difference (t test, $p<0.01$) between youth with oppositional defiant disorder alone and psychiatric comparison subjects.
- ^c Pairwise comparisons revealed a significant difference (t test, $p<0.01$) between oppositional defiant disorder youth with comorbid conduct disorder and psychiatric comparison subjects.
- ^d Pairwise comparisons revealed a significant difference (t test, $p<0.01$) between the two oppositional defiant disorder groups.

nificantly lower Global Assessment of Functioning Scale scores. In addition, families of oppositional defiant disorder youth with or without conduct disorder were characterized by significantly poorer cohesion and significantly higher conflict. Finally, the significantly impaired social interactions of youth with oppositional defiant disorder cut across all domains of social functioning (i.e., school, parents, siblings, and peers). Oppositional defiant disorder was a consistently significant correlate of these adverse outcomes after we controlled for comorbid conditions, including conduct disorder. Significant differences between youth with oppositional defiant disorder alone or with co-

morbid conduct disorder emerged primarily in the social domain and in rates of mood disorders. These results support not only the validity of the oppositional defiant disorder diagnosis as a meaningful clinical entity but also the extremely detrimental effects of this disorder on multiple domains of functioning in children and adolescents.

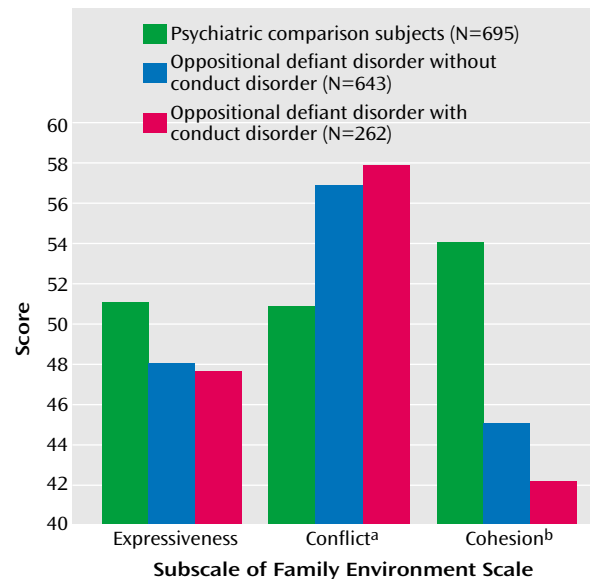
By creating two oppositional defiant disorder groups (i.e., subjects with oppositional defiant disorder alone and those with comorbid conduct disorder) as well as a psychiatric comparison group of subjects with neither disorder, our analyses permitted the examination of the effects of oppositional defiant disorder outside the con-

text of conduct disorder. Clearly, conduct disorder is a serious psychiatric disorder associated with high levels of morbidity. However, the common practice of combining data from oppositional defiant disorder and conduct disorder groups has obscured the unique correlates and clinical importance of oppositional defiant disorder beyond its association with conduct disorder. Prior studies of children with “conduct problems” have provided valuable information but have not clarified the clinical significance of oppositional defiant disorder in the absence of conduct disorder. The findings reported here show that oppositional defiant disorder contributes to substantial impairment in multiple domains even outside the context of conduct disorder and that this impairment is not accounted for by other psychiatric disorders. Thus, these findings highlight the high clinical and public health relevance of oppositional defiant disorder independent of its association with conduct disorder and underscore the need for further clinical and scientific effort aimed at understanding and ameliorating the adverse outcomes to which this disorder contributes.

The finding that oppositional defiant disorder is frequently comorbid with ADHD fits with previous research demonstrating significant overlap between the two disorders. Also consistent with prior research, however, is the finding that a meaningful percentage of children with ADHD did not have comorbid oppositional defiant disorder. Our findings documenting an equally large overlap between oppositional defiant disorder and mood and anxiety disorders are also congruent with the limited extant literature. Converging lines of evidence have also suggested that childhood “internalizing” (e.g., mood and anxiety) disorders frequently overlap with oppositional defiant disorder (11, 25–29). However, these associations between oppositional defiant disorder and other psychiatric disorders have typically been found in research in which the effects of comorbid conduct disorder were not isolated.

Our results suggest that oppositional defiant disorder is a highly heterogeneous disorder with varied presentations, possibly emanating from disparate and complex pathways. These findings have important scientific ramifications as we seek to identify those oppositional defiant disorder children at greatest risk for developing more severe difficulties (11) and further clarify familial transmission of the disorder (30). Such findings also have major clinical relevance, since a view of oppositional defiant disorder as a heterogeneous disorder has the potential to heighten awareness of the diverse factors that may contribute to the development of the disorder and raises the possibility that different manifestations of the disorder might require different approaches to treatment. For example, since treatment approaches for ADHD and disorders of mood and anxiety differ, their recognition in children with oppositional defiant disorder may allow clinicians a broader choice of therapeutic options (9). There is suggestion in the

FIGURE 4. Family Functioning in Youth With Oppositional Defiant Disorder, Alone or With Comorbid Conduct Disorder, and Clinically Referred Youth With Neither Oppositional Defiant Disorder Nor Conduct Disorder



^a Significant difference among groups determined by linear regression analysis that controlled for socioeconomic status and gender ($F=14.99$, $df=2, 500$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, higher scores were seen in youth with oppositional defiant disorder alone ($t=-4.97$, $df=413$, $p<0.01$) or with comorbid conduct disorder ($t=-4.10$, $df=286$, $p<0.01$).

^b Significant difference among groups determined by linear regression analysis that controlled for socioeconomic status and gender ($F=12.68$, $df=2, 497$, $p<0.01$). Pairwise comparisons revealed that relative to the psychiatric comparison subjects, lower scores were seen in youth with oppositional defiant disorder alone ($t=4.13$, $df=414$, $p<0.01$) or with comorbid conduct disorder ($t=4.30$, $df=289$, $p<0.01$).

literature that treating symptoms coinciding with oppositional defiant disorder can produce improvements in behaviors related to oppositional defiant disorder as well. For example, in 1999, the Collaborative Multimodal Treatment Study of ADHD (31) reported that stimulant medication produced significant improvements in both ADHD-related and oppositional behaviors. Other research has provided evidence for the efficacy of mood-enhancing medication in children whose oppositional behavior is associated with obsessiveness and irritability (26). Clearly, characterization and treatment of oppositional defiant disorder on the basis of comorbid presentations is an area worthy of significant research attention.

The high prevalence of oppositional defiant disorder within other clinical populations also deserves additional attention. It has been argued that each of the disorders comorbid with oppositional defiant disorder (e.g., ADHD, mood disorders, anxiety disorders, language impairments) may stem from or contribute to impairments in the domains of affective modulation and self-regulation (9). Developmental psychologists have long underscored the importance of these two factors with regard to a child's ca-

TABLE 2. Association Between Oppositional Defiant Disorder and Social Impairment and Impact of Other Clinical and Demographic Characteristics

Social Adjustment Inventory for Children and Adolescents Measure and Predictor	Impact on Social Impairment Measure		Analysis	
	Adjusted Odds Ratio	95% CI	t	p
Total score^a				
Oppositional defiant disorder	3.25	2.39 to 4.12	7.39	<0.01
Conduct disorder	2.40	1.27 to 3.53	4.17	<0.01
ADHD	1.07	0.06 to 2.08	2.09	<0.04
Bipolar disorder	0.67	−0.45 to 1.80	1.18	<0.24
Major depression	1.04	0.06 to 2.01	2.10	<0.04
Multiple anxiety disorders	0.39	−0.43 to 1.21	0.94	<0.35
Language impairment	1.37	0.44 to 2.29	2.90	<0.01
Pervasive developmental disorder	2.44	0.48 to 4.39	2.45	<0.01
Tourette's disorder	0.52	−1.18 to 2.21	0.60	<0.55
Socioeconomic status	0.13	−0.22 to 0.48	0.73	<0.47
Gender	−0.64	−1.51 to 0.23	−1.45	<0.15
Age	0.72	0.59 to 0.85	11.27	<0.01
School problems^b				
Oppositional defiant disorder	0.22	0.09 to 0.36	3.29	<0.01
Conduct disorder	0.21	0.04 to 0.39	2.40	<0.02
ADHD	0.38	0.22 to 0.53	4.81	<0.01
Bipolar disorder	0.07	−0.10 to 0.24	0.77	<0.44
Major depression	0.21	0.06 to 0.36	2.79	<0.01
Multiple anxiety disorders	−0.04	−0.17 to 0.08	−0.69	<0.49
Language impairment	0.14	0.00 to 0.28	1.90	<0.06
Pervasive developmental disorder	0.10	−0.20 to 0.40	0.63	<0.53
Tourette's disorder	0.14	−0.12 to 0.40	1.09	<0.40
Socioeconomic status	0.01	−0.04 to 0.06	0.43	<0.67
Gender	0.03	−0.10 to 0.16	0.47	<0.64
Age	0.02	0.00 to 0.04	2.39	<0.02
Problems with peers^c				
Oppositional defiant disorder	0.31	0.15 to 0.47	3.90	<0.01
Conduct disorder	0.45	0.25 to 0.66	4.40	<0.01
ADHD	0.09	−0.09 to 0.28	1.03	<0.30
Bipolar disorder	0.04	−0.16 to 0.25	0.45	<0.66
Major depression	0.04	−0.13 to 0.22	0.49	<0.62
Multiple anxiety disorders	0.03	−0.11 to 0.18	0.43	<0.66
Language impairment	0.25	0.09 to 0.42	3.01	<0.01
Pervasive developmental disorder	0.46	0.11 to 0.81	2.58	<0.01
Tourette's disorder	0.00	−0.31 to 0.30	−0.02	<0.98
Socioeconomic status	0.07	0.01 to 0.13	2.21	<0.03
Gender	−0.04	−0.20 to 0.11	−0.51	<0.61
Age	0.01	−0.01 to 0.03	0.88	<0.38
Problems with siblings^d				
Oppositional defiant disorder	0.64	0.47 to 0.81	7.48	<0.01
Conduct disorder	0.32	0.09 to 0.54	2.77	<0.01
ADHD	0.04	−0.15 to 0.24	0.44	<0.66
Bipolar disorder	0.24	0.02 to 0.46	2.18	<0.03
Major depression	0.04	−0.15 to 0.23	0.44	<0.66
Multiple anxiety disorders	−0.11	−0.27 to 0.06	−1.29	<0.20
Language impairment	0.01	−0.17 to 0.20	0.16	<0.87
Pervasive developmental disorder	0.15	−0.24 to 0.55	0.75	<0.31
Tourette's disorder	0.18	−0.17 to 0.53	1.01	<0.31
Socioeconomic status	−0.03	−0.10 to 0.04	−0.93	<0.35
Gender	0.03	−0.14 to 0.20	0.38	<0.70
Age	−0.02	−0.04 to 0.00	−1.76	<0.08

(continued)

capacity to adapt to environmental changes or demands and internalize standards of conduct (32–35). The skill of compliance—defined as the capacity to defer or delay one's own goals in response to the imposed goals or standards of an authority figure—can be considered one of many developmental expressions of a young child's evolving capacities in the domains of adaptation, internalization, self-regulation, and affective modulation (36). The capacity for compliance is thought to develop in a sequence that includes, in infancy, managing the discomfort that can ac-

company hunger, cold, fatigue, and pain; modulating arousal while remaining engaged with the environment; and communicating with caregivers to signal that assistance is needed (35). With the development of language, more sophisticated mechanisms for self-regulation and affective modulation develop, as children learn to use language to label and communicate their thoughts and feelings, develop cognitive schemas related to cause-and-effect, and generate and internalize strategies aimed at facilitating advantageous interactions with the environment

TABLE 2. Association Between Oppositional Defiant Disorder and Social Impairment and Impact of Other Clinical and Demographic Characteristics (*continued*)

Social Adjustment Inventory for Children and Adolescents Measure and Predictor	Impact on Social Impairment Measure		Analysis	
	Adjusted Odds Ratio	95% CI	t	p
Problems with parents^c				
Oppositional defiant disorder	0.83	0.68 to 0.98	10.62	<0.01
Conduct disorder	0.37	0.17 to 0.57	3.60	<0.01
ADHD	0.21	0.03 to 0.39	2.32	<0.02
Bipolar disorder	0.20	0.00 to 0.40	1.99	<0.05
Major depression	0.18	0.01 to 0.35	2.08	<0.04
Multiple anxiety disorders	-0.07	-0.22 to 0.07	-0.96	<0.34
Language impairment	0.09	-0.07 to 0.25	1.08	<0.28
Pervasive developmental disorder	0.25	-0.10 to 0.59	1.41	<0.16
Tourette's disorder	0.28	-0.02 to 0.58	1.84	<0.07
Socioeconomic status	0.00	-0.06 to 0.06	0.11	<0.91
Gender	-0.05	-0.20 to 0.10	-0.65	<0.52
Age	-0.02	-0.04 to 0.00	-1.76	<0.08

^a Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.38$; $F=26.91$, $df=12$, 519, $p<0.01$).

^b Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.16$; $F=8.52$, $df=12$, 519, $p<0.01$).

^c Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.17$; $F=8.66$, $df=12$, 517, $p<0.01$).

^d Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.23$; $F=10.95$, $df=12$, 439, $p<0.01$).

^e Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.36$; $F=23.98$, $df=12$, 518, $p<0.01$).

(35). It has been further argued that interventions focused solely on improving a child's compliance neither target nor effectively treat impairments in self-regulation and affective modulation and that medical and nonmedical interventions aimed at enhancing problem-solving skills, flexibility, and frustration tolerance might be better suited to the needs of many youth with oppositional defiant disorder (9).

These findings must be interpreted in terms of their clinical significance. In the general population, prevalence rates of the disorders examined in this study tend to be quite low (i.e., below 6%) (37, 38). Given the very high rates of comorbid disorders in subjects with oppositional defiant disorder, it seems clear that, compared with the general population, oppositional defiant disorder confers clinically significant risk for psychiatric comorbidity. With psychiatric comparison subjects as the reference group, clinically significant differences were most striking within the domain of mood disorders, where oppositional defiant disorder doubled the risk of both severe major depression and bipolar disorder. Oppositional defiant disorder also appears to confer clinically significant risk for social dysfunction compared with both nonclinical populations and psychiatric comparison subjects. Normative data for the Social Adjustment Inventory for Children and Adolescents (19) suggest that scores for youth with oppositional defiant disorder fall greater than two standard deviations below the mean on most subscales and the total score relative to nonclinical populations. The current data revealed that youth with oppositional defiant disorder fell between one-half and one standard deviation below the mean of psychiatric comparison subjects. With regard to family functioning, normative data for the Family Environment

Scale (24) suggest that youth with oppositional defiant disorder fall between one-half and one standard deviation below the mean for nonclinical populations of children, especially in the domains of conflict and cohesion.

These findings must also be understood in the context of methodological limitations. Cross-sectional data such as those we have reported do not permit examination of longitudinal patterns. For example, given the demonstrated sequential relationship between oppositional defiant disorder and conduct disorder, it is possible that some of the youth with oppositional defiant disorder alone in our study group would subsequently develop conduct disorder. However, we have previously shown that subsequent diagnoses of conduct disorder in youth with oppositional defiant disorder are quite low beyond age 6 (11). Given the mean age of our study group (10.8 years), we would anticipate that very few of the youth with oppositional defiant disorder alone in this data set would subsequently develop conduct disorder.

Our subjects were clinically referred and consisted primarily of Caucasian youth; thus, our results may not generalize to other groups of oppositional defiant disorder children. For example, our finding that oppositional defiant disorder is associated with significant comorbidity differs dramatically from one recent study (13), presumably because of important study group differences (subjects in the current study were both significantly older and clinically referred). Further, our data were obtained predominantly from mothers. While multiple informants provide a broader examination of a child's functioning, in prior studies we have shown significant overlap between information gathered from mothers and other reporters (39).

TABLE 3. Association Between Oppositional Defiant Disorder and Family Dysfunction and Impact of Other Clinical and Demographic Characteristics

Family Environment Scale Measure and Predictor	Impact on Family Dysfunction Measure		Analysis	
	Adjusted Odds Ratio	95% CI	t	p
Total score^a				
Oppositional defiant disorder	-1.03	-1.49 to -0.57	-4.37	<0.01
Conduct disorder	-0.31	-0.92 to 0.28	-1.03	<0.31
ADHD	-0.13	-0.67 to 0.40	-0.49	<0.62
Bipolar disorder	0.31	-0.28 to 0.91	1.05	<0.29
Major depression	0.35	-0.17 to 0.87	1.33	<0.18
Multiple anxiety disorders	-0.48	-0.92 to -0.04	-2.16	<0.03
Language impairment	0.16	-0.65 to 0.33	-0.65	<0.51
Pervasive developmental disorder	0.64	-0.38 to 1.67	1.23	<0.22
Tourette's disorder	-0.24	-1.20 to 0.72	-0.49	<0.63
Socioeconomic status	-0.29	-0.48 to -0.10	-3.08	<0.01
Gender	-0.07	-0.53 to 0.40	-0.29	<0.77
Age	-0.09	-0.16 to -0.02	-2.69	<0.01
Conflict^b				
Oppositional defiant disorder	6.24	3.64 to 8.83	4.72	<0.01
Conduct disorder	0.95	-2.40 to 4.30	0.55	<0.58
ADHD	1.55	-1.45 to 4.56	1.02	<0.31
Bipolar disorder	0.29	-3.02 to 3.58	0.17	<0.87
Major depression	-1.92	-4.81 to 0.96	-1.31	<0.19
Multiple anxiety disorders	0.94	-1.50 to 3.38	0.75	<0.45
Language impairment	0.16	-2.55 to 2.88	0.12	<0.90
Pervasive developmental disorder	-1.75	-7.40 to 3.89	-0.61	<0.54
Tourette's disorder	-0.06	-5.11 to 4.99	-0.02	<0.98
Socioeconomic status	-0.13	-1.17 to 0.91	-0.24	<0.80
Gender	0.63	-1.96 to 3.22	0.48	<0.63
Age	0.34	-0.04 to 0.71	1.77	<0.08
Cohesion^c				
Oppositional defiant disorder	-6.85	-10.58 to -3.12	-3.61	<0.01
Conduct disorder	-3.13	-7.98 to 1.73	-1.26	<0.21
ADHD	-0.62	-4.95 to 3.71	-0.28	<0.78
Bipolar disorder	-0.04	-4.81 to 4.73	-0.02	<0.99
Major depression	1.52	-2.62 to 5.66	0.72	<0.47
Multiple anxiety disorders	-2.82	-6.35 to 0.69	-1.58	<0.11
Language impairment	-1.36	-5.29 to 2.58	-0.68	<0.50
Pervasive developmental disorder	5.64	-2.66 to 13.95	1.34	<0.18
Tourette's disorder	0.07	-7.67 to 7.81	0.02	<0.99
Socioeconomic status	-2.76	-4.26 to -1.26	-3.62	<0.01
Gender	0.72	-2.99 to 4.43	0.38	<0.70
Age	-0.76	-1.29 to -0.22	-2.77	<0.01
Expressiveness^d				
Oppositional defiant disorder	-2.73	-5.36 to -0.10	-2.04	<0.04
Conduct disorder	-1.18	-4.58 to 2.22	-0.68	<0.50
ADHD	-0.54	-3.58 to 2.49	-0.35	<0.73
Bipolar disorder	3.79	0.44 to 7.14	2.22	<0.03
Major depression	1.30	-1.62 to 4.21	0.87	<0.38
Multiple anxiety disorders	-3.33	-5.80 to -0.86	-2.65	<0.01
Language impairment	-1.09	-3.83 to 1.65	-0.78	<0.44
Pervasive developmental disorder	1.45	-4.26 to 7.16	0.50	<0.62
Tourette's disorder	-1.33	-6.44 to 3.78	-0.51	<0.61
Socioeconomic status	-2.07	-3.13 to -1.02	-3.86	<0.01
Gender	-0.80	-3.43 to 1.82	-0.60	<0.55
Age	-0.35	-0.73 to 0.03	-1.82	<0.07

^a Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.11$; $F=4.73$, $df=12$, 473, $p<0.01$).

^b Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.07$; $F=3.08$, $df=12$, 482, $p<0.01$).

^c Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.11$; $F=4.71$, $df=12$, 479, $p<0.01$).

^d Accounted for a significant amount of the model variance as determined by least squares linear regression analysis ($R^2=0.07$; $F=3.19$, $df=12$, 481, $p<0.01$).

Finally, the findings we have described are cross-sectional; further study is required to examine the long-term sequelae of oppositional defiant disorder.

Despite these limitations, in a carefully assessed group of clinically referred youth, children with oppositional de-

fiant disorder evidenced significantly higher rates of comorbidity and significantly greater impairment in adaptive, social, and family functioning than did children without oppositional defiant disorder, and oppositional defiant disorder was a significant correlate of such impair-

ment even after we controlled for a wide range of comorbid conditions and demographic characteristics. These results support the validity of oppositional defiant disorder as a meaningful clinical entity independent of conduct disorder and warrant additional study of children and adolescents who are so diagnosed and a broadened examination of diverse approaches to treatment aimed at ameliorating their difficulties.

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