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Phenomenology of Clinic-Referred Children and Adolescents with Oppositional Defiant Disorder and Comorbid Anxiety

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Abstract This study examined profiles of clinic-referred youth with co-morbid oppositional defiant disorder (ODD) and anxiety disorders (ADs) compared to youth with ODD without ADs. One hundred and twenty seven clinic-referred youth with ODD (ages 7–14, 85.6 % Caucasian) were assessed through a multi-method, multi-informant approach. Global functioning, ODD symptom impairment, child internalizing symptoms, caregiver distress, and parent-child relationship quality were explored to test group differences based on AD diagnosis. Youth with ODD and comorbid ADs generally had higher levels of global impairment, internalizing symptoms, caregiver distress, and parent-child relationship problems as compared to youth with ODD only. These findings, which generally suggest greater impairment in the group of youth with ODD/AD, offer support for the presence of distinct clinical features in youth with ODD/AD compared to youth with ODD alone. Such findings may have important implications for assessment and treatment of ODD in youth. For example, interventions to target broader child internalizing symptoms, caregiver distress, and parent-child relationships may be particularly important in youth with ODD/AD profiles.

Keywords Comorbidity · Anxiety · Oppositional defiant disorder · Impairment

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The co-occurrence of anxiety disorders (ADs) and oppositional defiant disorder (ODD) affects a substantial proportion of children and may cause significant impairment in functioning. Epidemiological data indicate 11.3 % of children meet criteria for ODD and 9.9 % of children meet criteria for an AD (Costello et al. 2003); thus, the occurrence of both disorders in youth is common. Interestingly, the comorbidity rates of ADs in youth with ODD are three to seven times more likely to occur than what might be expected by chance (Angold et al. 1999). In their review of youth with ODD in epidemiological samples, Angold and colleagues reported that the rates of co-occurring ADs ranged from 9.6 % to 49.86 %. Similarly Greene and colleagues (2002) noted high rates of comorbidity in clinical samples, where approximately 40 % of clinic-referred youth with ODD met criteria for an AD. These disorders may be more likely to co-occur for both methodological (e.g., referral bias) and substantive (e.g., shared risk factors) reasons (e.g., Angold et al. 1999; Cunningham and Ollendick 2010). Although it is known that ADs are significantly more likely to co-occur in youth with ODD, the impact of ADs on functioning in youth with ODD has not been well established. Thus, the purpose of the current study was to examine whether the clinical profile of youth with ODD/AD is distinct and whether this profile signals greater impairment compared to youth with ODD in the absence of an AD.

The role of anxiety in predicting impairment in youth with ODD is not well understood though conceptual models suggest comorbid anxiety generally serves as either a risk factor or a protective factor in predicting impairment in youth with ODD (e.g., Cunningham and Ollendick 2010; Drabick et al. 2010).

For those who conceptualize anxiety as a risk factor, it is purported that the effect of anxiety is additive and increases impairment in the presence of other psychopathology, such as ODD. On the other hand, anxiety may also serve as a protective factor in youth with ODD, depending on contextual factors such as emotionality, family functioning, and age of the child. For example, a child with ODD who is also socially anxious may be less likely to engage in disruptive behavior due to fear of negative evaluation from parents, teachers, or peers; moreover, this effect may be stronger for older children who have greater insight into social norms. In fact, based on a systematic review, Cunningham and Ollendick (2010) concluded that youth with ODD and ADs may be at increased risk for both global impairment, elevated emotional and behavioral symptomatology, and increased family dysfunction, but that this risk might diminish as youth age. However, these conclusions were based on research examining youth with diverse anxiety disorders and a broad array of behavioral disorders, including attention deficit hyperactivity disorder (ADHD), ODD, and conduct disorder, instead of ODD alone. To our knowledge, no study to date has specifically compared general functioning, symptom levels, or family stressors in a diverse age-range of youth with diagnoses of ODD/AD to youth with ODD in the absence of AD. Given our limited understanding of the impact of ADs in youth with ODD, further examination of the clinical profile of such youth is of importance.

Although the clinical features of comorbid ODD/AD are not well understood, the clinical correlates and family environment characteristics of ADs and ODD have been well substantiated when examined as singular disorders (American Psychiatric Association 2000). Of course, true to their respective diagnoses, elevated levels of anxiety have been found in youth with ADs whereas elevated levels of oppositional, aggressive, and delinquent behavior have characterized youth with ODD (Achenbach 1990; American Psychiatric Association 2000; March et al. 1997). These relationships have generally been obtained across clinician, parent, and child informants. Furthermore, there is an extensive literature that links these disorders to specific forms of parent psychopathology and family environment functioning. Angold and colleagues (1999) reviewed a series of papers that linked maternal internalizing symptoms to ADs and conduct problems, such as ODD, in children (Beidel and Turner 1997; Hammen 1992; Last et al. 1987). Lansford and colleagues (2002, 2005) suggested higher levels of family conflict in youth with internalizing and externalizing behaviors. These findings suggest similar correlates of these quite phenomenologically different disorders. However, parental and familial differences in youth with ODD/AD versus ODD alone have not been well examined to date. It is important, therefore, to examine if the phenomenology of youth with comorbid ODD and AD captures the features of both disorders, or if the comorbid profile is clinically distinct and characteristic of greater impairment than a diagnosis of either ODD or AD alone.

Although there has been limited research examining clinical profiles of youth with co-morbid ODD/AD, at least one investigation has examined the characteristics of children with comorbid ADs and one of several disruptive behavior disorders (e.g., ODD, CD, ADHD) in relation to children with pure AD, co-morbid ADs, and comorbid depressive disorders (Franco et al. 2006). Results indicated the group with comorbid ADs and disruptive behavior disorders had significantly higher child-reported anxiety and parent-reported internalizing symptoms than youth with anxiety alone, but not higher ratings than the other two comorbid groups. Additionally, ratings of parent-reported externalizing symptoms were significantly higher in the anxious and disruptive behavior group as compared to the other groups. This study did not compare youth with comorbid AD/disruptive behavior disorders to youth with disruptive behavior disorders only. Further, this investigation used a broad disruptive behavior disorders group (ADHD, ODD, or CD) rather than a single disruptive behavior disorder such as ODD. Recently, Humphreys et al. (2012) reported similar findings in that ODD symptoms were more pronounced in youth with co-occurring ADs and ADHD as compared to youth with ADHD only, AD only, ADHD/anxiety, and controls (non-ADHD); however ODD diagnosis was not examined across groups in this investigation. Thus, the study of youth with comorbid AD/ODD as compared to youth with ODD alone would yield a unique contribution towards addressing current gaps in the literature.

The assessment of parent and family functioning may also serve to highlight differences across groups. In terms of comorbidity investigations, Franco and colleagues (2006) found parents of children with ADs/disruptive behavior disorders endorsed more parent psychopathology than parents of children with AD alone. On the other hand, Greene and colleagues (2002) found that youth with ODD had significantly greater rates of family impairment relative to other psychiatric comparison groups, even when ADs and other psychiatric conditions were controlled for. A recent investigation by Drabick and colleagues (2007) reported higher levels of family conflict in younger boys with co-occurring anxiety symptoms and ODD symptoms as compared to groups with either condition alone. However, it is unclear whether these same results would be obtained with a sample that included females and adolescents. Also, there is little known about family variables and whether they differ across groups based on mother or father informant.

Given the large number of youth with ODD and comorbid ADs and the paucity of research examining the clinical characteristics of this comorbid group, the current study examined clinic-referred youth with comorbid ODD/AD in comparison to clinic-referred youth with ODD alone (no ADs). Group differences in ODD symptom impairment, global functioning, presence of internalizing symptoms, and parent and family environment factors (with a focus on caregiver distress and parent-child relationship) were examined via a multi-method, multi-informant approach.

As there is a lack of previous research examining the clinical profiles of youth with ODD/AD as compared to youth with ODD alone, the investigation was largely exploratory. However, several hypotheses were examined: 1) In line with conceptual evidence and research suggesting increased impairment in youth with ODD/AD, we hypothesized children and adolescents with comorbid ODD/AD would have higher levels of ODD-symptom impairment, and greater impairment in global functioning compared to youth with ODD alone; 2) youth with comorbid ODD/AD would have more pronounced internalizing symptoms (both broader internalizing symptoms and symptom-specific anxiety); 3) parents of youth with ODD/AD would have higher levels of family stress as compared to youth with ODD alone, and 4) youth with ODD/AD would have more dysfunctional parent-child relationships as compared to youth with ODD alone. Group differences in child externalizing symptoms were also examined. Additional analyses were conducted to explore the possibility that the presence of ADHD in this clinical sample moderated the relationships between AD and one or more outcome variables.

Method

Participants

One hundred and twenty seven clinic-referred youth who were taking part in an ongoing NIMH study comparing a cognitive intervention (collaborative problem solving) to a behavioral intervention (parent management training) for the treatment of ODD in youth were enlisted. Participants were recruited from a rural area in southwestern Virginia. For purposes of this study, pre-treatment assessment data were used. To participate, participants had to receive a diagnosis of ODD in the initial assessment. Children with pervasive developmental delays or serious cognitive impairments were excluded. Table 1 reports sociodemographic characteristics for the 127 youth as a whole, for youth with ODD alone (no ADs, n = 47), and for youth with ODD/AD (n = 80). A number of the youth in both groups were also diagnosed with Attention-Deficit Hyperactivity Disorder (see below). Independent sample t - tests were computed for group differences among continuous variables (e.g., age, income) and chi-square values were calculated for categorical variables (e.g., gender, race, family structure). There were no significant differences in sex, age, race, family structure, or family income between youth with ODD alone and youth with ODD/AD (see Table 1).

Participants ranged in age from 7 to 14 years. A broad age range of youth from childhood to adolescence was used to determine whether comorbid anxiety differentially impacted youth with ODD during both childhood and early adolescence. Males comprised approximately two thirds of the sample, and the majority of the participants were Caucasian (n = 109, 85.8 %). The remaining 18 (14.2 %) participants self-identified as African American (n = 10), Hispanic (n = 5), Asian American (n = 2), and bi-racial (n = 1). Approximately three quarters of the sample resided in two-parent households.

Of the youth with comorbid ODD/AD (n = 80), the most commonly occurring anxiety disorders were generalized anxiety disorder (n = 28), specific phobia (n = 28), social phobia (n = 17), separation anxiety disorder (n = 14), posttraumatic stress disorder (n = 3), and obsessive compulsive disorder (n = 2). Other psychological disorders diagnosed in this subset included dysthymia (n =2), and major depressive disorder (n = 2). Twelve of the 80 youth with ODD/AD were diagnosed with at least two clinically significant ADs. In addition, 48 of these 80 youth were also characterized as having ADHD. In the group of youth with ODD without an AD (n = 47), the most common co-occurring diagnoses were ADHD (n = 30), enuresis (n = 5), dysthymia (n = 3), and major depressive disorder (n = 1). As both groups contained a large number of youth with ADHD, the percent of youth with ADHD was examined across the two groups. Presence of ADHD did not differ in youth with ODD alone as compared to youth with ODD/AD, χ^2= 0.18, p = .66).

Procedure

Data were collected by trained-to-criterion graduate clinicians in an APA-approved clinical psychology program

Table 1 Socio-demographic characteristics of total sample, ODD group, and ODD/AD group

	Total (n=127)	ODD (n=47)	ODD/AD (n=80)	t/chi^2	P
Age *M (SD)*	9.64 (1.76)	9.85 (1.98)	9.51 (1.62)	1.05	0.30
Gender n (%male)	83 (65.4)	31 (66)	52 (65)	0.01	0.91
Race n (%)					
Caucasian	109 (85.8)	40 (85.1)	69 (86.3)		
Other	18 (14.2)	7 (14.9)	11 (13.8)	0.05	0.82
Family structure n (%)					
Dual parent	85 (66.9)	35 (74.5)	50 (62.5)		
Single parent	22 (17.3)	7 (14.9)	15 (18.8)	0.03	0.86
Family income *M (SD)*	63564 (39956)	60514 (44547)	65705 (36654)	-0.63	0.53

ODD Oppositional defiant disorder; *AD* anxiety disorder; *M* mean; *SD* standard deviation; *P* parent; *C* child; *T* values reported for continuous variables; *chi2* values are reported for categorical variables

during two assessment sessions lasting a total of 4 h. After obtaining parent consent/permission and child assent, children completed self-report questionnaires and a diagnostic interview with one clinician, while mothers completed several questionnaires about themselves and their child in addition to a diagnostic interview regarding their child with a second clinician. Teacher consent was then obtained in accordance with our IRB procedures. When available, multi-informant data were obtained and analyzed. Specifically, father data were available for BASC reports (n = 89), BSI reports (n = 66), and PSI reports (n = 76) and teacher data were available for BASC reports (n = 65). Missing data were largely due to the absence of fathers in some families and to the fact that many youth were seen over the summer months when teacher ratings were not available. Presence of ODD and other psychiatric disorders were determined during a clinical consensus meeting attended by the parent clinician, child clinician, and principal investigator (a licensed clinical psychologist). Parent and child clinicians independently presented diagnoses based on the parent and child diagnostic interviews. Based on these reports a consensus diagnosis was arrived at by the team. In addition to establishing clinical diagnoses, clinician severity ratings of diagnoses and global impairment for each participant were obtained during the consensus process.

Measures

Anxiety Disorders Interview Schedule for DSM-IV, Child and Parent Versions (ADIS-C/P; Silverman and Albano 1996) The ADIS-C/P versions are semi-structured interviews designed for the diagnosis of most psychiatric disorders seen in childhood and adolescence. During the interview, the clinician assessed symptoms of various psychiatric conditions. These symptoms were used by the clinician to identify diagnostic criteria and to develop a clinician severity rating (CSR), which reflects the degree of clinical interference in functioning associated with each psychological disorder assessed. A CSR of 4 or above (0–8) indicates a diagnosable condition. Generally, parent and child report were used though it should be noted that the ADIS-P alone was used to assess for ODD (as the ADIS-C does not include ODD symptoms). The ADIS-C/P (for DSM-IV) has yielded acceptable to excellent 7 to 14-day test-retest reliability estimates regarding child (ages 7–16; κ = .61–.80) and parent (κ = .65–1.00) diagnoses (Silverman et al. 2001). Inter-rater agreement analyses of earlier versions of the ADIS-C/P have shown some variability in video (κ = .45–.82; Rapee et al. 1994) and live observer paradigms (κ = .35–1.00; Silverman and Nelles 1998), but in general, acceptable interrater agreement has been established for all specific diagnoses assessed by the ADIS. The inter-rater agreement (independent of the consensus process) for the ODD diagnoses obtained on approximately 30 % of the participants in the current study was excellent (κ = 1.00). CSR ratings of ODD were also found to be reliable (0.84).

Children's Global Assessment Scale (CGAS; Green et al. 1994; Shaffer et al. 1983) The CGAS is a 100-point rating scale measuring psychological, social, and school functioning in children ages 6 – 17 (where a low score indicates greater impairment in functioning). This measure was adapted from the Adult Global Assessment Scale and has been found to be a reliable and valid tool in rating a child's general functioning on a health-illness continuum. This measure was used as a dependent variable in assessing group differences in functioning of youth with ODD alone versus youth with ODD/AD. It was determined by the consensus team based on information obtained in the clinical interviews and the psychiatric histories of the participants.

Behavior Assessment System for Children (BASC; Reynolds and Kamphaus 1992) The BASC is a system of instruments that evaluates behaviors, thoughts, and emotions of children and adolescents. The measures vary between 100 and 160 items. Parent and teacher reports were used. Subscales used for this study included internalizing symptoms and externalizing problems. Internal consistency for the Teacher Ratings Scales is .80, and median test-retest reliability is .91 (Kamphaus and Frick 2005). The Parent Rating Scales also have good to excellent internal consistency (.70s–.90s; Kamphaus and Frick 2005). Research also provides evidence that the BASC demonstrates good convergent and discriminant validity (Merrell et al. 2003), as well as acceptable criterion validity (Reynolds and Kamphaus 1992). In the current investigation, the internal consistencies were as follows: Mother Internalizing = 0.92, Mother Externalizing = 0.90, Father Internalizing = 0.94, Father Externalizing = 0.92, Teacher Internalizing = 0.88, Teacher Externalizing = 0.97.

Beck Youth Inventories of Emotional and Social Impairment (BYI; Beck et al. 2001) The Beck Youth Inventories (BYI) measure internalizing and externalizing symptoms. The present study used the subscales of anxiety (Beck Anxiety Inventory for Youth: BAI-Y) and disruptive behavior (Beck Disruptive Behaviors Inventory for Youth: BDBI-Y). Each subscale has 20 items, developed for use in children ages 7 to 14 with responses on a 4 point Likert scale. Past research suggests test-retest reliability coefficients ranged from .74 to .90 for 7–10 year olds and .84 to .93 for 11–14 year olds (Beck et al. 2001). Convergent validity has also been demonstrated. For the current investigation, the internal consistencies of the BYI subscales were as follows: BAI-Y = .92 and BDBD-Y = .85.

Brief Symptom Inventory (BSI; Derogatis and Melisaratos 1983) The BSI has been used to identify self-reported clinically relevant psychological symptoms in adolescents and

adults. The BSI consists of 53 items covering various symptom dimensions. The subscales of focus for the current investigation included three internalizing subscales: interpersonal sensitivity, depression, and anxiety. Both test-retest and internal consistency reliabilities have been shown to be high (Boulet and Boss 1991). Additionally, high convergence between BSI scales and the MMPI provide good evidence of convergent validity (Boulet and Boss 1991). For the current study, the internal consistencies for the maternal scales were as follows: interpersonal sensitivity = 0.79. depression = .87, and anxiety = .82. The consistencies of the paternal scales were: interpersonal sensitivity = .81, depression = .85, and anxiety = .65.

Parenting Stress Index Short Form (PSI; Abidin 1995; Abidin and Brunner 1995) The PSI-SF is a 36-item questionnaire that assesses parenting stress. The items are rated on a 5-point scale ranging from "strongly agree" to "strongly disagree." The PSI subscales for this investigation included: parental distress, and parent-child (PC) dysfunctional interactions. Test-retest and internal consistency studies have yielded good reliability estimates (6 month test-retest reliability = .70 to .80; Cronbach's alpha = .80) (Abidin 1995). For the current investigation, the internal consistencies were as follows: Maternal distress: 0.82, Maternal PC interaction: 0.80, Father distress: 0.84, and Father PC interaction: 0.85.

Analytic Plan

Several Multivariate Analyses of Covariance (MANCOVAs) [1] were conducted to examine differences in youth with ODD alone versus youth with ODD/AD using MLR estimation in Mplus 6.12. For these analyses, missing data were handled using maximum likelihood parameter estimation with a 'saturated correlates' model to increase the likelihood of the missing at random (MAR) assumption being met, which is inherent in maximum likelihood missing data handling (e.g., Enders 2010). Since age and ADHD as covariates did not change results, we regressed the predictor variable only (ODD alone versus ODD/AD) for all analyses onto correlated response variables. To control for experiment-wise Type-1 error inflation while simultaneously preserving the statistical power of the investigation under consideration, we used the False Discovery Rate (FDR; Benjamini and Hochberg 1995).

The first MANCOVA, which assessed impairment, involved the combination of clinician ratings of general impairment (CGAS) and ODD-specific symptom impairment (CSR), both of which were clinician rated. The second MANCOVA assessed child internalizing symptoms via a multi-informant approach consisting of child, caregiver, and teacher reports. Both MANCOVAs 3 and 4 examined the impact of anxiety on internalizing symptoms separately for mothers and fathers. These models were run separately because there are no investigations to our knowledge that examine the role of child anxiety in predicting mother and father internalizing symptoms independently in youth with ODD. Finally, MANCOVA 5 assessed broader measures of caregiver-child dysfunction; thus we included parent-child dysfunction ratings from both mothers and fathers.

Results

Means and standard deviations of study variables comprising each MANCOVA are listed in Table 2. Both groups were characterized by poor global functioning (CGAS) and moderate/high ODD symptoms (CSR). Children with ODD/AD generally had elevated rates of child internalizing symptoms, caregiver distress, and parent-child dysfunction as compared to youth with ODD only.

Although not a primary focus of the current investigation, it should be noted that the results did not differ when re-run controlling for age and ADHD. Further, presence of ADHD did not moderate the relationship between anxiety and any of the dependent variables.

MANCOVA 1: Measures of Global Functioning (CGAS) and ODD Symptom Impairment (CSR)

Consistent with the first study hypothesis, youth with ODD/AD had significantly poorer global functioning (CGAS) as compared to youth with ODD alone (See Table 3). However, there were no significant differences among ODD CSR

[1] All MANCOVAs were performed in a structural equation modeling (SEM) statistical software program (Mplus Version 6.12) and are often referred to as generalized estimating equation (GEE) analyses. GEE analyses were performed instead of the more traditional MANCOVA for four reasons. *First*, GEE was used to handle missing data with maximum likelihood estimation via the inclusion of additional variables to form a 'saturated correlates' data analysis model that increases the likelihood that the implicit missing data assumption of missing at random (MAR) is met without biasing the parameter estimates of theoretical interest. Specifically, in our analyses, missing data for each MANOVA was handled by including all other response variables not being analyzed (e.g., for MANOVA #1, we included the response variables for MANOVAs 2-5) as missing data correlates in a 'saturated correlates' missing data handling model. *Second*, GEE was used to minimize Type-1 errors that could result from non-normally distributed data by using a maximum likelihood parameter estimation algorithm robust to non-normally distributed data (e.g., MLR). *Third*, GEE ensures that the traditional MANCOVA assumption of 'homogeneity of covariate regression slopes' was met through parameter estimate constraint procedures available in SEM software packages. *Lastly*, GEE allows for proceeding directly to the between-group tests of mean differences among correlated response variables without first conducting the MANCOVA omnibus *F*. For these reasons, the analyses performed in this paper are more accurately described as GEE analyses. The analysis logic employed is consistent with traditional MANCOVAs, but many of the expected statistics associated with MANCOVAs (i.e., an omnibus *F* statistic, such as Wilk's Lambda) are neither needed nor computed.

Table 2 Means and standard deviations of study variables

	Total		ODD		ODD/AD	
MANCOVA 1: Impairment						
	M	*SD*	*M*	*SD*	*M*	*SD*
CGAS	58.91	5.96	60.77	6.02	57.81	5.67
CSR	5.91	1.08	5.98	1.07	5.87	1.08
MANCOVA 2: Child Internalizing Symptoms						
BASC	*T*	*SD*	*T*	*SD*	*T*	*SD*
mother	61.08	13.39	57.81	12.71	63.18	13.48
father	57.49	13.66	51.94	13.35	60.93	12.79
teacher	54.28	11.21	50.36	8.48	56.28	11.98
BAI						
child	45.7	9.5	43.18	7.58	47.38	10.31
MANCOVA 3: Mother Distress						
BSI	*T*	*SD*	*T*	*SD*	*T*	*SD*
int sens	42.77	26.16	36.73	27.65	46.8	24.53
depress	39.2	27.92	30.6	29.8	44.84	25.3
anxiety	45.91	22.69	43.42	23.46	47.5	22.24
PSI	*M (%)*	*SD*	*M (%)*	*SD*	*M(%)*	*SD*
distress	27.62(56)	7.05	25.21(49)	5.76	28.97(61)	7.38
MANCOVA 4: Father Distress						
BSI T(SD)	*T*	*SD*	*T*	*SD*	*T*	*SD*
int sens	36.77	31.3	34.04	31.22	38.44	31.62
depress	34.68	30.4	33.12	30.34	35.63	30.77
anxiety	42.17	25.74	36.12	28.18	45.85	23.74
PSI	*M (%)*	*SD*	*M (%)*	*SD*	*M(%)*	*SD*
distress	27.74(58)	7.07	25.32(49)	6.98	29.15(63)	6.8
MANCOVA 5: Parent-Child Dysfunctional Interaction						
PSI	*M (%)*	*SD*	*M (%)*	*SD*	*M(%)*	*SD*
mother	28.53(82)	7.36	26.03(75)	6.94	29.97(87)	14.08
father	27.23(79)	6.99	24.28(70)	6.51	29.02(85)	6.72

ODD oppositional defiant disorder; *AD* anxiety disorder; *CGAS* Children's Global Assessment Scale; *CSR* Clinician Severity Rating of ODD Symptoms; *BASC* Behavior Assessment System for Children; *BAI* Beck Anxiety Inventory; *BSI* Brief Symptom Inventory; *PSI* Parenting Stress Index; *int sens* interpersonal sensitivity

scores in youth with ODD alone versus those with ODD/AD. These findings suggest that both groups were characterized by moderate to severe ODD symptom impairment, with the ODD/AD group evidencing greater overall impairment in global functioning, but not greater ODD symptom severity.

MANCOVA 2: Measures of Child Internalizing Symptoms

Table 3 presents significant group differences in child internalizing symptoms. As expected, child internalizing symptoms as reported by mother, father, and child were significantly higher for youth with ODD/AD as compared to youth with ODD alone. This was true for both broader internalizing symptoms, as reported by the parents and anxiety-specific symptoms, as reported by the children. Although teachers did not report significantly higher internalizing symptoms in youth with ODD/AD, the results trended in the hypothesized direction.

MANCOVAS 3 and 4: Mother Distress and Father Distress

Group differences in caregiver distress are reported in the lower half of Table 3. Both mothers and fathers reported higher parental distress in families of youth with comorbid ODD/AD as compared with youth with ODD alone. Further, on the BSI, mothers of children with ODD/AD reported significantly higher levels of interpersonal sensitivity, and higher levels of other internalizing symptoms (depression, anxiety) that approached significance as compared to mothers of children with ODD alone. However, there were no significant differences across the groups in paternal reports of psychopathology on the BSI.

MANCOVA 5: Parent-Child Dysfunctional Interaction

Both mothers and father reported higher levels of parent-child dysfunction in youth with ODD/AD as compared to youth with ODD alone.

Table 3 Differences in youth with ODD/AD versus ODD

	Est.	SE	Z	*p*	Cohen's *d*
MANCOVA 1: Impairment					
CGAS	-3.15	1.12	-2.81	0.02	0.53
CSR	-0.10	0.21	-0.50	0.63	0.10
MANCOVA 2: Child Internalizing Symptoms					
BASC					
mother	14.89	6.26	2.38	0.03	0.46
father	19.82	6.50	3.05	0.02	0.62
teacher	12.97	7.19	1.80	0.10	0.47
BAI					
child	4.66	1.90	2.46	0.03	0.48
MANCOVA 3: Mother Distress					
BSI					
int sens	0.34	0.15	2.27	0.04	0.45
depress	0.23	0.13	1.72	0.11	0.34
anxiety	0.24	0.13	1.86	0.10	0.37
PSI					
distress	4.03	1.45	2.78	0.02	0.59
MANCOVA 4: Father Distress					
BSI					
int sens	0.20	0.16	1.24	0.26	0.30
depress	0.13	0.13	0.95	0.37	0.23
anxiety	0.12	0.10	1.14	0.29	0.28
PSI					
distress	4.23	1.67	2.54	0.03	0.59
MANOVA 5: P-C Dysfunctional Interaction					
PSI					
mother	4.06	1.51	2.69	0.02	0.57
father	4.47	1.54	2.91	0.02	0.68

ODD Oppositional defiant disorder; *AD* anxiety disorder; *CGAS* Children's Global Assessment Scale; *CSR* Clinician Severity Rating of ODD Symptoms; *BASC* Behavior Assessment System for Children; *BAI* Beck Anxiety Inventory; *BSI* Brief Symptom Inventory; *PSI* Parenting Stress Index; *int sens* interpersonal sensitivity; *depress* depressive symptoms; *P-C* – parent-child

Secondary Analyses: Child Externalizing Symptoms

No significant group differences between youth with ODD and youth with ODD/AD were found in parent, teacher, or child reported externalizing symptoms. Thus, both groups showed comparable levels of externalizing difficulties.

Discussion

To our knowledge, this is the first investigation to compare a clinic-referred sample of children and adolescents with comorbid AD/ODD diagnoses to youth with ODD in the absence of ADs. Specifically, this study is the first to examine comorbid AD in an ODD sample in terms of ODD symptom impairment, global functioning, emotional/behavioral functioning, and family environmental functioning. This research builds upon other investigators (e.g., Franco et al. 2006) which have examined clinical profiles of youth with disruptive behavior disorders/ADs as compared to youth with other forms of psychopathology. Further, this investigation expands the current literature by focusing on a sample of youth with ODD specifically versus those with broad disruptive behavior disorders. Additionally, this study utilized a "gold-standard" multi-informant, multi-method approach (e.g., De Los Reyes and Kazdin 2005; Grills and Ollendick 2002) in examining group differences. Specifically, the current study utilized clinician-, parent-, teacher-, and youth- reports via interviews and questionnaires. The addition of mother and father reports of caregiver distress and parent-child relationship is a particularly important contribution to the literature in this area.

The findings suggest some support for a unique clinical profile for youth with ODD/AD as compared to youth with ODD alone. For example, youth with ODD/AD have lower levels of global functioning as compared to youth with ODD in the absence of an AD diagnosis, which is in line with both theoretical models and empirical research (e.g., see Cunningham and Ollendick 2010, for review). There are several possible explanations for this finding. For example, comorbid psychopathology may have an additive effect, resulting in greater impairment of global functioning, particularly so in the case of a diverse comorbid profile that includes both internalizing and externalizing disorders (see Drabick et al. 2010). Another possible explanation is that youth with ODD/AD are more likely to show greater impairment in global functioning under certain conditions, such as in the presence of greater family dysfunction. Further, the potential buffering effect of anxiety on ODD may not develop until the transition from adolescence to adulthood. Future studies to test moderators and mediators of functioning in youth, adolescents, and young adults with disruptive behavior disorders and comorbid ADs are needed and would help explicate these findings.

It is interesting to note that no differences were noted in severity of ODD symptoms (nor in levels of other externalizing symptoms). These findings suggest that AD in the presence of ODD may not impact the presentation of the severity of the ODD diagnosis, but the ODD/AD presentation may lead to greater impairment that is captured in broader domains of functioning.

As expected, youth with ODD/AD had higher levels of internalizing symptoms across mother, father, and child reports, demonstrating higher levels of both both broad internalizing symptoms (mother and father report) and specific increases in anxiety symptoms (via child reports), consistent with study hypotheses. These findings provide validity to our group assignments based on clinical diagnoses (Achenbach

1990; Seligman et al. 2004) and support the notion that youth with co-occurring anxiety may express global internalizing symptoms. Although teachers did not report greater levels of internalizing symptoms in youth with ODD/AD, these findings may be due to teachers being less attuned to the internalizing symptoms these youth experience in light of the more obvious ODD symptoms they express in the classroom. Of note, neither of our groups had significantly higher levels of externalizing symptoms across study informants. Thus, both groups displayed comparable amounts of these symptoms as determined by multiple informants.

This study also suggests unique family environmental risk factors may be associated with comorbid diagnoses of ODD/AD compared to those with ODD alone. Specifically, the current investigation found that both mothers and fathers of children with ODD/AD reported higher levels of parent stress and poorer parent-child relations compared to parents of children with ODD alone. Thus, parents may perceive more strained relationships in youth with comorbid conditions, as the comorbidity may pose an added burden to the family system. Although the findings regarding caregiver anxiety symptoms and depressive symptoms were not statistically significant, mothers of children with ODD/AD did report more interpersonal sensitivity compared to mothers of youth with ODD alone. This finding supports previous research (e.g., Franco et al. 2006) and suggests that mothers may be more likely to exhibit internalizing symptoms when their children are diagnosed with an internalizing disorder, which may be due to a combination of shared environmental and/or genetic factors.

In interpreting these findings, several limitations should be noted. For example, youth with ODD have a tendency to underreport symptoms (e.g., Kamphaus and Frick 2005); thus, caution should be exercised when interpreting results from the youth themselves. Also, there was more missing data for fathers and teachers, thereby limiting the potential interpretability of the findings. In addition, the findings as a whole are limited in generalizability as they were derived from a largely Caucasian, middle childhood/early adolescence, clinic-referred sample of youth. Testing these research questions with epidemiological and more representative samples of youth would facilitate generalizability of the findings.

Yet another limitation of the current study is that we were unable to group youth with ODD based on their specific AD; however, given the current study sample size limitations, as well as sample size limitations of previous studies (e.g. Franco et al. 2006), such analyses have generally not been undertaken. Future studies examining clinical profiles of youth with ODD/AD should examine youth with ODD and individual types of ADs as compared to youth with ODD alone. It is also important to consider the role of other disorders in terms of impact on clinical profiles and impairment levels. In addition, it would be interesting to examine clinical profiles of youth with ODD/ADs longitudinally. In the context of a longitudinal investigation, it would be possible to determine if the presence of AD changes from a risk factor to a protective factor over time. Finally, it would be beneficial to examine contextual factors (e.g., gender, family environment) that might lead to lower global functioning in youth with ODD/AD. In particular, it would be interesting the examine the role of family environment in predicting functioning in youth with ODD/AD as compared to youth with ODD alone in subsequent investigations.

These results may have important implications for both assessment and treatment. Our findings underscore the importance of a multi-informant multi-method approach to assessment in children with ODD. A comprehensive approach to assessment, with a special focus on the assessment of ADs is of particular importance as the presence of an AD may be associated with lower global functioning and related complications for a child with ODD. These findings may also have important ramifications for treatment planning of youth with comorbid ODD/AD. The use of evidenced-based treatments to target the child's comorbidity may be particularly beneficial (e.g., Chorpita et al. 2004; Levy et al. 2007). Based on the findings from this investigation, youth with ODD/AD may benefit from family-focused interventions given that increased caregiver distress and increased difficulties in parent-child relationship were more evident in families of youth with comorbid ODD/AD. Given that both mothers and fathers reported increased distress and increased parent-child dysfunction, it may be important that both caregivers are involved in the treatment process to optimize outcomes for such youth. Interventions that target caregiver psychological functioning may also increase the efficacy of treatment interventions for youth with comorbid ODD/AD.

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