

## Clinical presentation and treatment outcome for children with comorbid externalizing and internalizing symptoms

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### Abstract

This study examined the effects of comorbid separation anxiety disorder (SAD) on the expression of externalizing symptoms in children presenting with oppositional defiant disorder (ODD) as well as the treatment effects on anxiety and internalizing symptoms. Participants were 64 children with ODD seen in parent–child interaction therapy (PCIT), including 15 children with comorbid SAD. Children with ODD + SAD did not differ from children with ODD only in disruptive behavior severity at pre-treatment assessment, and children with ODD + SAD showed significant decreases in SAD symptoms at post-treatment. Additionally, children with clinical levels of internalizing behavior demonstrated significant reductions in these symptoms, along with reduction of externalizing symptoms targeted in treatment. We discuss the possibility that treatments focusing on parent–child interactions and certain parenting skills may generalize across specific child symptom constellations.

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High rates of multiply diagnosed children have led to increased attention to the diagnosis of comorbid psychological disorders. Comorbidity introduces several important issues, particularly when considering effective treatment options for young children. Limited research exists on treatment course and outcomes for children with comorbid psychological disorders, and the research that does exist largely focuses on homotypic comorbidity. For example, researchers have examined treatment implications for comorbid anxiety and depression (Kendall, Kortlander, Chansky, & Brady, 1992); and comorbid attention-deficit hyper-

activity disorder and conduct disorder (Abikoff & Klein, 1992). However, a significant number of children experience symptoms of both anxiety disorders and disruptive behavior disorders (Jackson, Frick, & Dravage-Bush, 2000; Verduin & Kendall, 2003; Wright, 2001). Current literature largely fails to address the effects of co-existing externalizing and internalizing symptoms on symptom expression and treatment outcome. Wright (2001) found that the presence of separation anxiety disorder (SAD) actually exacerbated the rate of disruptive behavior in a sample of boys. This suggests that comorbid disorders are not entirely separate entities. Rather, co-existing disorders may influence each other in both presentation and course. One study using parent–child interaction therapy (PCIT) to treat disruptive behaviors in preschoolers found significant improvements in internalizing as well

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as externalizing behavior problems on the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) after treatment (Eisenstadt, Eyberg, McNeil, Newcomb, & Funderburk, 1993), although internalizing problems were not clinically elevated before treatment in that study. Still, the reduction of internalizing symptoms suggests that elements of treatment may have affected both types of symptoms in that sample. A recent Parent Management Training (PMT; DeGarmo, Patterson, & Forgatch, 2004) study also found significant reductions in both externalizing and internalizing behaviors following treatment for externalizing problems. Their results further suggested that improvements in externalizing behaviors were more strongly related to reductions in internalizing behaviors than to changes in parenting practices. These results suggest strong bidirectional relations between internalizing and externalizing behaviors and the importance of using comprehensive treatment programs that demonstrate the ability to generalize across different types of symptoms.

Treatments for child anxiety disorders typically involve cognitive behavior therapy (CBT) techniques such as psycho-education, cognitive restructuring, and exposure, and their effectiveness with school-aged children and adolescents is well documented (Albano & Kendall, 2002; Silverman & Berman, 2001). Recent CBT studies have suggested that parent involvement in the treatment of child anxiety may enhance outcome (Eisen, Engler, & Geyer, 1998; Mendlowitz et al., 1999; Silverman & Berman, 2001). For example, Mendlowitz et al. found that parent involvement improved children's use of active coping strategies and overall emotional functioning.

Parent and child factors often interact to influence the development of childhood anxiety and other childhood internalizing disorders. Anxious mothers are less positive, more critical, and less granting of autonomy than nonanxious mothers (Whaley, Pinto, & Sigman, 1999). Low levels of parental acceptance and inconsistent discipline are associated with depression in children as well (Gonzales, Pitts, Hill, & Roosa, 2000). Even in very early childhood, children of anxious parents evidence higher risk for anxiety disorders (Hirshfeld-Becker & Biederman, 2002) and children of depressed parents evidence higher risk for depressive disorders (Downey & Coyne, 1990). These parent-child links support the role of familial factors in the development of depressive and anxiety disorders (Beidel & Turner, 1997), and twin studies support genetic as well as environmental influences in their etiology (Kendler, 1996; Silberg, Rutter, & Eaves,

2001). Findings such as these suggest that early interventions focused on parent-child interactions may enhance outcomes for internalizing disorders (Barrett, Rapee, Dadds, & Ryan, 1996; Hirshfeld-Becker & Biederman, 2002; Whaley et al., 1999).

Parent involvement and early intervention are key aspects of many successful treatment programs for externalizing behavior problems. PCIT is an evidence-based treatment for families of young children with disruptive behavior. Treatment begins with a child-directed interaction (CDI) phase in which parents learn to follow their child's lead in play situations, using skills similar to traditional play therapy techniques to enhance the parent-child relationship. The parent-directed interaction (PDI) phase of treatment is introduced after CDI skills are mastered. In this second phase of treatment, parents learn ways to lead the child's activity and to provide consistent consequences for child cooperation or disobedience (Brinkmeyer & Eyberg, 2003). Both phases of PCIT teach parents basic behavioral principles for managing child behavior: parents learn to ignore maladaptive child behaviors and to reward adaptive child behaviors with positive attention. Although empirically established for the treatment of disruptive behavior, researchers have proposed PCIT for treating the internalizing behavior disorders of young children, including Generalized Anxiety Disorder and SAD (Eyberg, 1979; Lyman & Hembree-Kigin, 1994). PCIT provides opportunities for parents to model and reinforce many positive coping skills. PCIT also reduces harsh and inconsistent discipline (Eisenstadt et al., 1993), which is significantly linked to both internalizing and externalizing behavior disorders in young children. A recent pilot study of PCIT with children with a primary diagnosis of SAD demonstrated significant reductions in anxiety, along with lower rates of disruptive behavior (Choate, Pincus, Eyberg, & Barlow, 2005). These pilot data as well as earlier PCIT research (Eisenstadt et al., 1993) support further examination of PCIT in treating internalizing disorders, and specifically SAD, in young children. SAD is the most common anxiety disorder in preschool-aged children (Silverman & Dick-Niederhauser, 2004), and its symptoms largely involve child distress at parent-child separation (APA, 1994). Thus PCIT, with its focus on the parent-child interactions, seems a promising treatment for SAD.

In this study, we examined data from an ongoing study of PCIT for children with oppositional defiant disorder (ODD) to explore questions related to the comorbidity of externalizing and internalizing behaviors. We examined the effects of comorbid ODD + SAD on the expression of externalizing symptoms and treatment outcome in

Table 1  
Pre-treatment demographic characteristics for SAD and no-SAD groups

Category	SAD ( <i>n</i> = 15)			No-SAD ( <i>n</i> = 49)			<i>t</i>	$\chi^2$	<i>p</i>
	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%			
Child age (months)	48.80	13.96		55.83	13.19		−1.766		.08
Family Hollingshead	37.82	14.58		41.10	14.03		−.680		.50
Male child			58			66		.73 (1)	.39
Child minority			17			33		1.71 (1)	.19
Comorbid CD			60			37		2.46 (1)	.12
Comorbid ADHD			71			78		.28 (1)	.59
Comorbid MDD			0			4		.59 (1)	.44

children presenting with ODD, the effects of PCIT on SAD symptoms, and the effects of PCIT broadly on both externalizing and internalizing symptoms in children with ODD with and without comorbid SAD. Our first hypothesis was based on Wright's 2001 finding that the presence of SAD exacerbated disruptive behavior in boys with ODD. We therefore predicted that children meeting diagnostic criteria for both SAD and ODD before treatment would show higher rates of disruptive behavior than children with ODD only, but that both groups would show similar improvement in disruptive behavior after treatment. Our second hypothesis was that symptoms of SAD in children with comorbid ODD + SAD would improve meaningfully after PCIT. Our third hypothesis was that symptom reduction following PCIT would be evidenced in both internalizing and externalizing symptoms more generally, in addition to the specific symptoms of ODD and SAD.

## 1. Method

### 1.1. Participants

Participants were 64 children with a diagnosis of ODD who completed treatment in a larger study examining the effects of a maintenance treatment after standard PCIT. The sample included 15 children with SAD and 49 without SAD. Additionally, 26 children were at or above the clinical cutoff ( $T \geq 64$ ) on the internalizing composite of the Child Behavior Checklist (Achenbach, 1991, 1992), and 38 were below the cutoff. Although there was overlap between children with SAD and children with elevated internalizing scores ( $n = 8$ ), they were not identical groups.

To be included in the larger study, children had to meet diagnostic criteria for ODD and live with at least one caregiver able to participate in treatment. The child had to obtain a Standard Score of 75 or higher on the Peabody Picture Vocabulary Test (PPVT), and the primary caregivers had to obtain a Standard Score of 75

on the Wonderlic Personality Test. Both of these cognitive screening measures are highly correlated with overall IQ. Exclusion criteria included a history of severe sensory or mental impairment (e.g., deaf, autistic) for the child or immediate crisis requiring hospitalization or out-of-home placement. The original sample included 100 families who began treatment, with a 36% attrition rate. Although high, this is comparable to attrition rates found in other treatment programs for children with externalizing behavior disorders. Importantly, attrition rates were similar for children with and without SAD. Children in the final sample ranged in age from 3 to 6 years ( $M = 4.48$ ,  $SD = 1.13$ ), with 42 boys and 22 girls. The sample was 77% Caucasian, 6% African American, 2% Hispanic, 1% Asian, and 14% biracial (Caucasian and African American).

The 15 children with SAD did not differ from the 49 children without SAD on age, sex, racial/ethnic group, socioeconomic status (SES), or presence of co-morbid attention-deficit hyperactivity disorder, major depressive disorder, or conduct disorder (CD).<sup>1</sup> The 26 children identified with clinically significant internalizing problem behavior also did not differ on any demographic variable from the remaining 38 children in the sample, with the exception of rates of CD. Children above the clinical cutoff of the internalizing composite on the CBCL were more likely to have a diagnosis of CD. Tables 1 and 2 include the demographic composition and comorbid diagnoses of both diagnostic groupings.

### 1.2. Measures

The *Child Behavior Checklist* (Achenbach, 1991, 1992) has different forms depending on the child's age.

<sup>1</sup> For purposes of this study, children with CD were not excluded from the group of children otherwise meeting all criteria for ODD.

Table 2  
Pre-treatment demographic characteristics for internalizing and no internalizing groups

Category	Internalizing ( <i>n</i> = 26)			No internalizing ( <i>n</i> = 38)			<i>t</i>	$\chi^2$	<i>p</i>
	<i>M</i>	<i>SD</i>	%	<i>M</i>	<i>SD</i>	%			
Child age (months)	53.78	14.26		53.79	12.97		-.129		.90
Family Hollingshead	39.30	13.97		40.39	13.33		-.276		.78
Male child			43			57		.01 (1)	.99
Child minority			30			24		.88 (1)	.35
Comorbid CD			57			32		4.21 (1)	<.05
Comorbid ADHD			84			71		1.62 (1)	.20
Comorbid MDD			4			3		.04 (1)	.84

Parents of children aged 4–6 completed the CBCL/4-18, which consists of 118 behavior-problem items rated on a 3-point scale from (0) *not true* to (2) *very true or often true*. The items have been factor analyzed into two broadband scales of internalizing and externalizing behavior problems. Mean 1-week test–retest reliability for the Internalizing Scale is .89, and for the Externalizing Scale is .93. The CBCL/2-3, administered to parents of 3-year-old children in this study, is similar in format to the CBCL/4-18 but contains 99 items rated by the parent for frequency in the past 2 months on the 3-point scale. Test–retest reliability of the CBCL/2-3 has been reported at .81 for the Internalizing Scale and .90 for the Externalizing Scale over a 3-week period (Koot, Van Den Oord, Verhulst, & Boomsma, 1997). Additionally, the CBCL includes narrow band scales assessing specific problem areas, including an Aggressive subscale. One-week test–retest reliability for the Aggressive subscale has been reported at .91 (Achenbach, 1991). In this study, Cronbach’s alpha for the CBCL/2-3 was .92, and for the CBCL/4-18 was .94.

The *Eyberg Child Behavior Inventory* (ECBI; Eyberg & Pincus, 1999). The ECBI is a 36-item parent rating scale of externalizing behavior in children between the ages of 2 and 16. The Intensity Scale measures the frequency of child problem behaviors on a 7-point scale from (1) never to (7) always. The Problem Scale measures the degree to which the child’s behaviors are problematic for the parent on a *yes–no* scale. The Intensity and Problem Scales of the ECBI yield internal consistency coefficients of .95 and .93; inter-rater reliability coefficients of .69 and .61; and test–retest reliability coefficients of .80 and .85 across 12 weeks and .75 and .75 across 10 months. In this study, Cronbach’s alpha for the ECBI was .90.

The *Diagnostic Interview Schedule for Children* (DISC-IV-P; Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) is a structured diagnostic interview of child psychopathology based on *Diagnostic and*

*Statistical Manual of Mental Disorders* criteria (DSM-IV; American Psychiatric Association, 1994). Test–retest reliabilities have been reported at .54 for ODD and .58 for SAD on this instrument. The DISC-IV-P was administered to the child’s primary caregiver (female caregiver in every case) at pre- and post-treatment by a trained graduate research assistant.

The *Peabody Picture Vocabulary Test-Third Edition* (PPVT-III; Dunn & Dunn, 1997). The PPVT-III is a well-standardized measure of receptive language in individuals aged 2.6 years through adulthood. Raw scores are converted into standard scores (*M* = 100, *SD* = 15). Split half reliability coefficients for children range from .86 to .97, with a median of .94. Test–retest reliabilities range from .91 to .94. The PPVT-III was used as a cognitive screening measure for children in this study.

The *Wonderlic Personnel Test* (WPT; Dodrill, 1981). The WPT is a 50-item test designed as a screening scale of adults’ intellectual abilities. In a sample of 120 normal adults, the Wonderlic estimate of intelligence correlated .93 with the WAIS Full Scale IQ score, and the Wonderlic score was within 10 points of the WAIS IQ score for 90% of the sample (Dodrill, 1981). Differences in age, sex, education, level of intelligence, and emotional adjustment did not significantly affect observed correlations with the WAIS. The WPT Full Scale IQ estimate was used as a cognitive screening measure for parents.

### 1.3. Procedure

Following the informed consent process, families completed a pre-treatment assessment that included the administration of the PPVT to the child, and the WPT and DISC interview to the female primary caregiver. The child’s female primary caregiver also completed several psychological measures, including the CBCL and ECBI. Certain oppositional behaviors are developmentally appropriate in preschool-aged children

Table 3  
Number of ODD and SAD symptoms before and after treatment for oppositional children with and without comorbid SAD

Pre-treatment group	<i>n</i> <sup>a</sup>	ODD symptoms				SAD symptoms			
		Pre		Post		Pre		Post	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
SAD	14	7.00	1.24	3.07	1.94	3.86	.95	1.36	1.65
No-SAD	44	6.41	1.24	3.09	1.88	1.33	1.34	.69	.89

<sup>a</sup> Reported sample size differs from original *n* due to missing data.

(Keenan & Wakschlag, 2002). Thus, to ensure that each child warranted the DSM diagnosis, criteria included the following: (a) diagnostic criteria met by the female primary caregiver's responses on the DISC interview and (b) clinically elevated scores on the Aggressive subscale of the CBCL. Diagnoses of SAD were determined by the female primary caregiver's responses on the DISC; due to limitations in study design, no other measure of child anxiety was included. Children were also classified as demonstrating significant internalizing and externalizing symptoms based on the female primary caregiver's responses on these two broadband scales of the CBCL.

Following the pre-treatment assessment, families began PCIT, starting with the child-directed interaction phase in which they learned to play with their child in a nondirective way using specific positive attending skills, such as reflecting the child's verbalizations and giving labeled praise. From behind a one-way mirror, the PCIT therapist coached parents, via a bug-in-the-ear microphone, in the CDI skills while they played with their child. Parents continued in the CDI phase of treatment until they achieved pre-set skill levels indicating mastery of the CDI. Families in this study participated in a mean of 5.65 (*SD* = 2.2) CDI sessions. Children with SAD did not differ from those without SAD in number of CDI sessions needed to reach CDI mastery,  $t(98) = -.577, p = .57$ .

Once parents mastered CDI skills, the family moved on to the parent-directed interaction phase of treatment, which focused on effective disciplinary skills. In this phase, parents were taught and coached to use simple, direct commands and to follow through consistently with labeled praise for compliance and timeout for noncompliance. Treatment continued until the parents reached mastery criteria for both the CDI and PDI skills and reported their child's behavior problems within 1/2 standard deviation of the normative mean on the ECBI.

The mean number of total treatment sessions for families in this study was 14.05 (*SD* = 7.2), and the average length of treatment was 18.9 weeks

(*SD* = 11.4). Children with SAD did not differ from those without SAD in total number of sessions,  $t(98) = -.297, p = .767$ , or length of treatment,  $t(98) = -.631, p = .53$ . Therapists followed the PCIT treatment manual (Eyberg and Child Study Laboratory, 1999) for each session. To evaluate treatment integrity, all therapy sessions were videotaped. Fifty percent of the session tapes from each family were randomly selected for integrity checking by undergraduate research assistants who reviewed the tapes and recorded, on integrity checklists available in the treatment manual, the elements of each session that were covered by the therapists. From this subset of tapes, 50% were again randomly selected and checked independently by a second undergraduate assistant to provide an inter-observer reliability estimate of the treatment integrity data. Treatment integrity was 90%, with percent agreement reliability 94%. Once families completed treatment, they participated in a post-treatment assessment, which included re-administration of the DISC-IV, ECBI, and the CBCL.

## 2. Results

### 2.1. ODD symptoms at pre- and post-treatment

Mean scores for ODD symptoms before and after treatment for the SAD and no-SAD group are shown in Table 3. Two-way repeated measures ANOVA demonstrated a significant effect for time, suggesting that ODD symptoms decreased for the total sample,  $F(1, 56) = 124.70, p < .001$ , Cohen's  $d = 1.71$ .<sup>2</sup> The main effect for group was not significant, indicating the two groups did not differ in number of ODD symptoms at pre-treatment,  $t(59) = 1.20, p = .231$  and there also was no difference in ODD symptom change between children with and without SAD,  $F(1, 56) = .885$ ,

<sup>2</sup> The repeated measures version of Cohen's  $d$  was used in all reported effect sizes.

Table 4

CBCL internalizing and externalizing scores at pre- and post-treatment for oppositional children with and without clinically significant internalizing behavior problems before treatment

Pre-treatment group	<i>n</i>	Internalizing scores				Externalizing scores			
		Pre		Post		Pre		Post	
		Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>	Mean	<i>SD</i>
Internalizing	26	69.89	4.02	52.48	10.11	75.63	4.72	58.07	10.34
No internalizing	34 <sup>a</sup>	55.33	7.08	42.79	8.46	69.94	7.33	53.0	7.43

<sup>a</sup> Reported sample size differs from original *n* due to missing data.

$p = .35$ . The presence of SAD did not affect the initial presentation of ODD in this sample and did not differentially affect the reduction in children's ODD symptoms during treatment.

### 2.2. SAD symptoms at pre- and post-treatment

Table 3 also shows mean scores for SAD symptoms in the SAD and no-SAD groups at pre- and post-treatment. A two-way repeated measures ANOVA revealed a significant group  $\times$  time interaction,  $F(1, 55) = 18.93$ ,  $p < .001$ , Cohen's  $d = .67$ . Planned contrasts showed that children meeting diagnostic criteria for SAD at pre-treatment had significant reductions in their SAD symptoms at post-treatment,  $t(13) = 7.27$ ,  $p < .001$ . Further, of the 15 children diagnosed with SAD before treatment, 73% ( $n = 11$ ) no longer met diagnostic criteria for SAD at the end of treatment.

### 2.3. Change in internalizing and externalizing symptoms with treatment

Table 4 shows the mean Internalizing Scale scores at pre- and post-treatment for the children who met the clinical cutoff ( $T$  score  $\geq 64$ ) on the CBCL internalizing problems scale and the children who did not. A two-way repeated measures ANOVA revealed a significant main effect for time,  $F(1, 59) = 138.25$ ,  $p < .001$ , Cohen's  $d = 1.78$ . Post hoc analyses indicated that although the internalizing group had higher internalizing scores than the non-internalizing group at pre-treatment,  $t(61) = 10.32$ ,  $p < .001$ , both the internalizing group  $t(26) = 8.04$ ,  $p < .001$ , and the non-internalizing group  $t(33) = 8.46$ ,  $p < .001$ , decreased their internalizing scores significantly. However, the internalizing group still had higher internalizing scores at post-treatment,  $t(59) = 4.07$ ,  $p < .001$ .

Table 4 also shows mean pre- and post-treatment externalizing behavior problem scores for children with and without clinically elevated internalizing behavior problems before treatment. Two-way repeated measures

ANOVA showed a significant main effect for time,  $F(1, 59) = 192.04$ ,  $p < .001$ , Cohen's  $d = 1.84$ , indicating that externalizing behaviors decreased significantly from pre- to post-treatment for the total sample. However, the time  $\times$  group interaction was not significant,  $F(1, 59) = .127$ ,  $p = .723$ , revealing no differences in the amount of change in externalizing behavior between groups. Interestingly, children with clinically elevated internalizing scores had significantly higher externalizing scores at pre-treatment than children without clinically elevated internalizing scores,  $t(61) = 3.52$ ,  $p < .01$ , and continued to demonstrate significantly higher externalizing scores at post-treatment,  $t(59) = 2.15$ ,  $p < .05$ .

### 2.4. Clinical significance of changes in internalizing problem behaviors

Clinically significant change in internalizing behavior was assessed using stringent criteria proposed by Jacobson and Truax (1991). They recommend that when normative data are available and the functional and dysfunctional populations overlap, the cutoff score used in assessing clinically meaningful change be the point that lies halfway between the means of the functional and dysfunctional groups (Jacobson & Truax, 1991). Comparing the 26 children who met or exceeded the published clinical cutoff ( $T = 64$ ) on the Internalizing Scale before treatment with the mean score for children in the normative sample, this cutoff score was 60. Seventy-three percent ( $n = 19$ ) of children in the internalizing group demonstrated a reduction in internalizing symptoms to below this cutoff after treatment (see Table 4). Jacobson and Truax suggested it is also important to compute a reliable change index to ensure that the change from pre- to post-treatment is statistically reliable and not simply a reflection of an imperfect measure. The reliable change index is calculated by subtracting a child's pre-treatment from post-treatment score and dividing that number by the standard error of the difference between the two scores.

Table 5  
Reliable change index for participants in the clinical range ( $T \geq 64$ ) on the child behavior checklist Internalizing Scale at pre-treatment

Participant	Pre-treatment, <i>T</i> score	Post-treatment, <i>T</i> score	Reliable change index	Falls below 60 (clinically significant)
1	71	43	-4.22 <sup>a</sup>	Y
2	76	46	-4.52 <sup>a</sup>	Y
3	72	53	-2.86 <sup>a</sup>	Y
4	72	69	-.45	N
5	69	46	-3.47 <sup>a</sup>	Y
6	74	46	-4.22 <sup>a</sup>	Y
7	72	55	-2.56 <sup>a</sup>	Y
8	77	51	-3.92 <sup>a</sup>	Y
9	75	68	-1.06	N
10	71	57	-2.11 <sup>a</sup>	Y
11	71	71	.0	N
12	66	43	-3.47 <sup>a</sup>	Y
13	66	61	-.75	N
14	68	61	-1.06	N
15	69	43	-3.92 <sup>a</sup>	Y
16	71	51	-3.02 <sup>a</sup>	Y
17	77	43	-5.13 <sup>a</sup>	Y
18	64	70	-.90	N
19	65	39	-3.92 <sup>a</sup>	Y
20	65	51	-2.11 <sup>a</sup>	Y
21	64	43	-3.17 <sup>a</sup>	Y
22	69	53	-2.41 <sup>a</sup>	Y
23	70	43	-4.07 <sup>a</sup>	Y
24	74	58	-2.41 <sup>a</sup>	Y
25	67	51	-2.41 <sup>a</sup>	Y
26	66	64	-.30	N

<sup>a</sup> A reliable change index  $\geq 1.96$  denotes meaningful change from pre- to post-treatment.

The same 73% ( $n = 19$ ) who dropped below a *T* score of 60 also demonstrated reliable change (see Table 5).

### 3. Discussion

Our study found no evidence to suggest that comorbid SAD affected the expression of externalizing symptoms in young children referred for treatment of ODD. Children with comorbid SAD did not differ in the severity of their disruptive behavior compared to children without SAD. The presence of SAD also did not appear to have a negative effect on treatment outcome with respect to children's symptoms of ODD or externalizing behavior more generally. After treatment, children with or without SAD showed statistically significant reduction in symptoms of ODD. Children with comorbid SAD also showed statistically significant reductions in SAD symptoms, and 73% no longer met diagnostic criteria for SAD after treatment. The internalizing behavior problems of the total sample more generally, regardless of pre-treatment level, were significantly improved after PCIT, and the children with clinically elevated internalizing behavior showed clinically significant change.

This study adds to the limited research on comorbidity of psychological disorders in young children. Notably, our results did not replicate Wright's (2001) finding that SAD exacerbated disruptive behavior. The boys in Wright's study were older than children in our study and were drawn from a residential treatment facility. Differences in sample characteristics may account for the different findings. However, our results did suggest that children with clinically elevated internalizing symptoms demonstrated greater severity in externalizing symptoms before and after treatment. Further study of the effects of internalizing and externalizing comorbidity on symptom expression and treatment response in different child clinical populations is clearly needed.

The findings of this study have important clinical implications for treatment of young children with comorbid internalizing and externalizing problems. By targeting maladaptive parent-child interactions and the negative parenting behaviors thought to contribute to both internalizing and externalizing disorders of childhood, PCIT appears to affect both anxious and disruptive child behaviors. The basic behavioral principles that

underlie skills parents learn to use in the CDI and PDI phases of treatment are not problem-specific. Both phases of PCIT focus generally on increasing desirable behaviors and decreasing undesirable behaviors that children present during on-going interactions with their parents. PCIT itself does not distinguish the thoughts and emotions underlying the behaviors targeted for change. For example, children would as likely receive praise for assertive behaviors as for quiet behaviors depending on their desirability for the particular child.

The findings may also have implications for young children with SAD, one of the most prevalent psychological disorders of childhood (Silverman & Dick-Niederhauser, 2004). Cognitive behavioral treatments have been highly successful in treating the anxiety disorders of school-age children (Albano & Kendall, 2002), and limited research suggests it can be effective for preschool age children as well (Treiber, 1985). However, the cognitive abilities of some young children may not be sufficiently developed to benefit fully from a cognitive behavioral approach. By targeting maladaptive parent–child interactions, PCIT may affect child anxiety not only by changing the negative parenting styles known to contribute to child anxiety but also by teaching parents to improve child coping skills incompatible with anxiety-related behaviors.

The results of this study should be interpreted in light of its limitations. First, this study did not include a control group of untreated children with comorbid disorders. The pre–post design does not rule out the possibility that changes were due to regression to the mean, maturation, or other uncontrolled factors. Still, studies suggest that childhood anxiety tends to be chronic if untreated (Hirshfeld-Becker & Biederman, 2002), and studies also show that disruptive behaviors of children on PCIT waitlists do not improve without treatment (Brestan, Eyberg, Boggs, & Algina, 1997). Such findings suggest it unlikely that the improvements in internalizing and externalizing behaviors in this study would have occurred without treatment.

It must also be noted, however, that children were not recruited for the presence of SAD. The larger study required only a diagnosis of ODD, and recruitment specifically for children with comorbid internalizing and externalizing disorders might result in different family dynamics or characteristics than in this sample of children whose symptoms of SAD were incidental to the purpose of their treatment. Further, because children were recruited for treatment of ODD, their internalizing symptoms were considered secondary. Children with a primary diagnosis of SAD might have presented with more severe symptoms of anxiety that would not have

responded so readily to PCIT. Nevertheless, our results are consistent with preliminary findings documenting significant SAD symptom reduction in children with a primary diagnosis of SAD (Choate et al., 2005).

Our measurement of anxiety in this study is an additional limitation. Only one direct measure of anxiety was included, namely, the SAD module of the NIMH DISC-IV. The inclusion of a diagnostic interview developed specifically to measure child anxiety disorders, such as the Kiddie-ADIS, as well as targeted anxiety rating scales, such as the MASC, would have provided greater accuracy in assessment of anxiety. Finally, the small sample of children with comorbid SAD must be acknowledged. It will be important to replicate these results prospectively in a randomized clinical trial with larger samples.

Despite these limitations, this study makes an important contribution to the literature on treatment of young children with anxiety disorders. The effect sizes of change in children's internalizing behavior problems were substantial, and it is notable that most of the children with SAD did not meet criteria for this diagnosis after treatment. Also of note, the symptoms of SAD and other internalizing behaviors were not specifically targeted as a treatment goal. Directly targeting these symptoms among the treatment goals for comorbid children might be expected to show additional benefits for these children and families. This study suggests that by focusing treatment on improvements in the parent–child relationship and parent behavior management skills, PCIT may affect a range of emotional and behavioral symptom clusters in young children.

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