

Parental Involvement in the Treatment of Childhood Obsessive Compulsive Disorder: A Multiple-Baseline Examination Incorporating Parents

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The efficacy of exposure and response prevention and the potential contribution of parental involvement in treatment were investigated for four children with principal *DSM-III-R* diagnoses of obsessive compulsive disorder (OCD) referred to the Center for Stress and Anxiety Disorders, Child and Adolescent Fear and Anxiety Treatment Program. Monitoring consisted of parent and child diaries of obsessive compulsive symptoms and daily child Subjective Units of Distress (SUDS) ratings for a 10-item hierarchy. Children progressed in a multiple baseline fashion through four phases: baseline monitoring, exposure and response prevention, exposure and response prevention plus parent involvement, and maintenance. Results through 12-month follow-up suggest that exposure and response prevention with parent involvement shows promise in the treatment of childhood OCD.

Epidemiological studies examining obsessive compulsive disorder (OCD) in children and adolescents reveal a lifetime prevalence of 2% and incidence of 1% of the general adolescent population (Flament et al., 1988; Whitaker et al., 1990). These data have demonstrated that, for nonreferred adolescents, the true prevalence of OCD is 2 to 20 times higher than had previously been estimated, based on clinically referred children and adolescents (Flament et al., Whitaker et al.). Only 20% of the adolescents receiving a lifetime diagnosis of OCD had received psychiatric care, the majority for associated depression and anxiety. Childhood OCD follows a chronic but fluctuating course (Berg et al., 1989; Flament et al.). Studies of OCD in adulthood suggest that 22% of adult patients report onset of the disorder before age 15 (Goodwin,

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Guze, & Robins, 1969; Lo, 1967). Onset is earlier in males than in females, yielding a predominance of males in younger samples and equal male to female ratios in older samples (Swedo, Rapoport, Leonard, Lenane, & Cheslow, 1989). No particular pattern has emerged for socioeconomic or ethnic data in children with OCD. Symptoms of OCD in children are similar to those found in adults, and often accompanied by severe impairment in functioning (Flament et al.; Last & Strauss, 1989). It is not uncommon for parents to become involved in the child's symptoms through assistance in the performance of rituals, provision of compulsive reassurance, and avoidance of situations or actions that may provoke compulsions (Harris & Wiebe, 1992; Honjo et al., 1989; Riddle et al., 1990).

According to the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)* (American Psychiatric Association, 1994), obsessions are defined as recurrent or persistent thoughts, impulses, or images that cause marked anxiety or distress. Compulsions are overt repetitive behaviors (e.g., hand washing, checking) or covert mental acts (e.g., praying, counting) that are performed to prevent or reduce anxiety or distress. Children are not required to recognize the unreasonable nature of these symptoms. The current *DSM-IV* definition clarifies the functional relationship between obsessions and compulsions, and fits well with the behavioral treatment rationale for exposure and response prevention (Riggs & Foa, 1993). Briefly, exposure is designed to activate the obsessive thought and resultant anxiety response. At the same time, response prevention (prevention of the compulsive rituals) allows the person to access corrective information, and results in habituation to the feared consequence. The reader interested in a detailed description of exposure and response prevention is referred to Riggs and Foa.

Despite reports of the prevalence and chronicity of childhood OCD, the study of psychosocial treatment for childhood OCD has lagged far behind that in the adult literature. Although the combination of exposure and response prevention has become the nonpharmacological treatment of choice in adult OCD (Riggs & Foa, 1993), a review of 37 studies in the childhood OCD treatment literature reveals only nine reports of its use in the treatment of children and adolescents (Knox, 1994). Five of these reports are of uncontrolled case studies involving one or two children, and one report is a retrospective case review. Harris and Wiebe (1992) and Lindley, Marks, Philpott, and Snowden (1977) provide data on OCD symptoms over treatment conditions, and Harris and Wiebe give baseline data. However, neither report gives experimental control as provided by such design features as reversal or phasing of treatment conditions across behavior. Recently, March, Mulle, and Herbel (1994) reported on the only prospective study of the treatment of childhood OCD involving multiple children; however, no control groups were used, and the majority of the 15 children received multiple treatments (14 received medication, 2 received family therapy, and 2 received supportive family therapy).

Another limitation of these investigations is the failure to provide specific

descriptions of the implementation of the exposure and response prevention methods. In those reports where treatment techniques are described, implementation varies greatly. For example, Harris and Wiebe (1992) utilized 5–10 minute exposures followed by 1–2 hours of response prevention during inpatient treatment. O'Connor (1983) used daily between-session imaginal exposures of 1-hour duration with response prevention imposed continuously throughout treatment. Zikis (1983) used daily between-session, 1 to 2 hour periods of in vivo exposure and continuous response prevention. Bolton and Turner (1984) used 2-hour periods of graduated in vivo exposure twice daily and continuous response prevention during inpatient treatment. Ong and Leng (1979) reported 1-hour exposures and continuous response prevention during inpatient treatment. Apter and Tyano (1988) reported that they were unable to implement exposure and response prevention due to child "secretiveness" and resistance. Most recently, March et al. (1994) used therapist-assisted and between-session imaginal and in vivo exposure with response prevention combined with relaxation, breathing techniques, constructive self-talk, and positive coping. Overall, conclusions regarding the efficacy of exposure and response prevention in the treatment of childhood OCD are limited by the prevalence of multiple treatments and the lack of experimental control. Excluding the Apter and Tyano children, the success rates reported in the literature suggest that 50% of children are symptom-free, 36% improved, and 14% showed no change in condition at posttreatment. In studies reporting follow-up evaluations, 64% are reported as symptom-free, 23% improved, and 14% showed no change at follow-up periods ranging from 1 to 38 months.

Given reports of parental involvement in child OCD symptoms, it is reasonable to assume that complete response prevention might be achieved only with parental cooperation, and thus parent involvement in treatment should increase treatment efficacy. Parents have been involved in treatment through family therapy (Dalton, 1983; Hafner, Gilchrist, Bowling, & Kalucy, 1981), contingency management (Queiroz, Motta, Madi, Sossai, & Boren, 1981), parent-conducted exposure (Zikis, 1983), and parent-imposed response prevention (Francis, 1988; Zikis). Despite the prevalence of parent involvement in treatment, no reported study has provided a controlled investigation of the added efficacy of parent involvement.

The present study is a controlled multiple baseline across subjects designed to test the efficacy of exposure and response prevention (ERP) in the treatment of childhood OCD. Following a staggered baseline monitoring phase, therapist-assisted ERP was implemented across four children. In order to test the hypothesis that the addition of parent involvement to treatment is a necessary condition for complete response prevention and improves the efficacy of ERP, a third phase of parent-assisted ERP (ERP-P) was included in the protocol. Maintenance sessions followed the parent phase. This study represents the authors' efforts to develop and empirically test a new behavioral treatment protocol for childhood OCD that incorporates the social support system of the child in an effort to maximize positive therapeutic effects.

Method

Participants

Four children referred for treatment to the Center for Stress and Anxiety Disorders (CSAD), Child and Adolescent Fear and Anxiety Treatment Program, participated in this study. A principal *DSM-III-R* diagnosis of OCD was required for inclusion in this treatment study. Children age 6 and below or age 18 and above, or those with current psychotic features, mental retardation, suicidal ideation of a severity sufficient to warrant crisis intervention, organic brain syndrome, or developmental disabilities of significant intensity to impair attention and concentration were excluded from this study and given appropriate referrals. The following stabilization periods for ongoing medication and/or psychotherapy were required prior to assessment: fixed dosing of any antidepressant, neuroleptic, or antihypertensive for at least 3 months; fixed dosing of any benzodiazepine for at least 1 month; 2 weeks fixed dosage of ritalin; or participation in psychotherapy for an anxiety disorder or related features for at least 3 months. A washout period of at least 1 month following discontinuation of medication or therapy was required prior to assessment.

Nine children met diagnostic criteria for this study. Three children refused participation for the following reasons: one for lack of interest in participating in treatment; two upon learning of the monitoring requirements. Following the occurrence of a panic attack, one child dropped during the monitoring phase. His parents withdrew him from the program for fear of escalating anxiety. All four children refused treatment within our program that was not part of a research protocol, and were subsequently offered appropriate referrals within the community. One additional child was excluded from this study due to the presence of hoarding behavior. Hoarding is conceptualized as an avoidance behavior characterized by refusal to discard or throw things away and thus circumvents compulsive checking. A different baseline monitoring system was necessary for this child, rendering his data incompatible with that of the four children included here. This child was offered treatment within our clinic that was not part of a research study. A capsule description of each participant follows:

The first child was an 8-year-old Caucasian female with a 3-year history of obsessive fears of monsters accompanied by compulsive bedtime rituals. She reported spending 1 to 2 hours engaged in compulsions daily. Covert rituals were present, though overt compulsions predominated. Her parents reported that the compulsions had decreased slightly when they began refusing to accompany her during her bedtime routine. However, they sent her upstairs to her bedroom each night to perform her routines before telling her good night. In addition, they complained of having to spend time reassuring her and assisting her in checking under the bed for monsters. She was not on medication before or during treatment.

The second child was a 13-year-old Caucasian male with a 6-month history of obsessive fears of contracting AIDS and compulsive reassurance-seeking,

spitting, and avoidance of being alone at home or in public restrooms. His parents reported that he spent more than 3 hours engaged in compulsions daily. He denied covert rituals. His parents reported accompanying him around the house and into public restrooms and providing him with frequent reassurance. At intake he was stabilized on the antidepressant fluoxetine (Prozac; a serotonin reuptake inhibitor) in alternating dosage, 20 mg one day and 40 mg the next, prescribed by a local psychiatrist. During the maintenance phase of treatment, the parents expressed a strong desire to discontinue the medication, and their psychiatrist reinforced this decision. Treatment continued during tapering and washout with no adverse effects reported.

The third child was an 11-year-old Caucasian male with a 4-year history of obsessive fears of his possessions being lost or damaged and compulsive ordering and arranging. He denied covert rituals. His parents reported that he spent approximately 25% of each day engaged in compulsions. His parents reported that they avoided entering his room, sitting in his dining room chair, or disordering his possessions. In addition, they provided additional time to allow for compulsions in such daily routines as getting ready for school or bed. He had been previously diagnosed by the family physician with attention deficit hyperactivity disorder, and was maintained on methylphenidate (Ritalin) at 10 mg prior to intake. As methylphenidate may act as a disinhibitor of compulsive symptoms, the dosage was decreased to 5 mg under the supervision of the subject's physician while OCD symptoms and hyperactivity were monitored by the child's parents. The parents reported that OCD symptoms remained unchanged while hyperactivity substantially increased. Dosage was returned to therapeutic levels prior to the start of treatment, and a stable dosage of 10 mg was maintained throughout treatment and follow-up.

The fourth child was an 11 year old Caucasian male with a 1-year history of severe compulsive rituals that included repeating, touching, and stepping rituals, and a 2-year history of Tourette's Disorder. He initially denied the occurrence of obsessions but, during the pretreatment interview, admitted to obsessive fears of harm befalling his family and pets. Compulsions were engaged up to 45 minutes at a time, and, according to maternal report, occurred almost continually, and were performed freely in front of others and at school. His clinical picture was complicated by the following additional diagnoses: overanxious, Tourette's, separation anxiety, dysthymic disorders, enuresis, and specific phobia. In addition, oppositional behavior and possible attention deficit and hyperactivity were noted by the interviewer. However, given the number and complexity of the assigned diagnoses, the interviewer was unable to determine whether separate clinical diagnoses of oppositional defiant disorder and attention deficit hyperactivity disorder were warranted. He was stabilized on clonidine prior to intake. Following the diagnostic interview and preceding the pretreatment assessment, the clonidine was discontinued due to insufficient response. Medication discontinuation occurred simultaneously with the initiation of a 4-week baseline period.

Measures

Diagnostic interview. Diagnoses at pretreatment were derived from separate, structured, clinical interviews, utilizing the Anxiety Disorders Interview Schedule, Child and Parent Versions (ADIS-C/P; Silverman, 1991a). The ADIS-C/P allows differential diagnosis among the *DSM-III-R* anxiety disorders, externalizing behavior disorders, affective disorders, substance abuse, and psychosis. Diagnoses are first made separately for the child and parent interviews and then composite diagnoses are determined. In addition, clinical severity ratings (CSR), reflecting the degree of resultant distress and interference, are assigned on a 0 to 8 scale for each assigned diagnosis ($CSR \geq 4$ denotes a clinical diagnosis). A scaled-down version of the ADIS-C/P was administered by independent interviewers at posttreatment and 3- and 12-month follow up. All interview items pertaining to the diagnostic criteria for anxious and affective disorders are retained in this version. Sections pertaining to externalizing behavior disorders, substance abuse, and psychosis, as well as items designed to provide research data, are omitted to decrease the demands the assessment places on the family. Interviewers at our clinic receive extensive training in the administration of the ADIS-C/P. They must match on principal and additional diagnoses and must match within one point on associated clinical severity ratings for three of five administrations to receive certification. All interviewers in this study were clinical psychologists or doctoral students in at least their second year of training and were certified in the administration of this measure. Although it was not possible to keep interviewers totally blind, interviewers at posttreatment and follow-up periods were not informed of child participation in the study or of pretreatment diagnoses.

The initial reliability of the ADIS-C and the ADIS-P was assessed on a sample of 51 children (ages 6 to 18; 27 girls, 24 boys) and their mothers (Silverman & Nelles, 1988). Interrater agreement between interviewer and observer as indicated by product-moment correlation coefficients was .92 for the ADIS-C and .98 for the ADIS-P for obsessions; .99 for the ADIS-C and .99 for the ADIS-P for compulsions; and .98 for the ADIS-C and .93 for the ADIS-P overall. Kappa coefficients for interrater agreement over all diagnoses were .84 for the ADIS-C, .83 for the ADIS-P, and .78 for the composite diagnoses (Silverman & Nelles). Overall Kappa coefficients for 10-day to 2-week test-retest reliability on a sample of 50 parent-child pairs were .75 for the composite diagnoses (Silverman, 1991b).

Self-report measures. The Leyton Obsessional Inventory—Child Version (LOI-CV) was administered at pretreatment, posttreatment, and 3- and 12-month follow up. The LOI-CV is a downward extension of the adult inventory and consists of 44 card-sort items to test for persistent thoughts, checking, fear of dirt and/or dangerous objects, cleanliness, order, repetition, and indecision (Berg, Rapoport, & Flament, 1986). The inventory yields a score for the total number of OCD symptoms (Yes scale), and scores for Resistance (0 to 3 scale from “sensible” to “try very hard to stop”) and Interference (0 to 3 scale from “no interference” to “interferes a lot”). An obsessive patient group

(ages 10 to 18; 17 males, 9 females), provisionally diagnosed as having severe primary OCD, based on *DSM-III* criteria, scored significantly higher than normal (ages 11 to 18; 22 male, 6 female) and psychiatric (ages 10 to 17; 10 male, 4 female) control groups. Nevertheless, considerable overlap was found in score ranges obtained for the groups. Mean scores obtained by the obsessive patient group were 20.9 ($SD = 8.3$) for the Yes scale, 32.3 ($SD = 20.0$) for the Resistance scale, and 32.8 ($SD = 23.2$) for the Interference scale, as compared to mean scores obtained by the normal control group of 12.9 ($SD = 5.6$), 11.1 ($SD = 7.7$), and 10.0 ($SD = 8.3$), respectively. Test-retest intraclass correlations were .96 for Yes scores, .97 for Resistance scores, and .94 for Interference scores. Extensive variability was found in scores obtained by children assigned a diagnosis of OCD, and the authors recommend that multiple assessment measures be employed (Berg et al.).

Monitoring. A pretreatment assessment was conducted with each subject to identify the functional relationships between external and internal fear cues, associated feared consequences, avoidance, compulsions, and parental responses. A hierarchy of exposure items with corresponding Subjective Units of Distress (SUDS) ratings was constructed. Children were trained in giving SUDS ratings with an 8-point thermometer. Verbal anchors are associated with both the pictured thermometers (0 = none, 2 = a little bit, 4 = some, 6 = a lot, 8 = very, very, very much) and the numerical ratings (0 = no anxiety/fear, 2 = mild anxiety/fear, 4 = moderate anxiety/fear, 6 = severe anxiety/fear, 8 = the worst anxiety/fear). The thermometer assists the child in more accurately expressing level of distress and resistance to and interference from compulsions by giving a visual stimulus on which to anchor his or her feelings (Barrios & Hartmann, 1988). Children also recorded daily SUDS ratings for items on their hierarchy.

Children and their parents completed continuous self-monitoring diaries during pretreatment baseline and treatment and follow-up phases of the study. Children were instructed to record each compulsive act, the associated obsessive thought, the place and triggering event, date and time, and associated anxiety. Parents recorded each observed compulsion, place and triggering event, date and time, and parental response to the child's compulsion. Composite compulsive frequency scores for each day were obtained by adding the number of compulsions recorded on the child diary to the number of different compulsions recorded on the parent diaries. Interrater reliability of the composite frequency score for a randomly chosen 10% of the data for two children chosen at random was satisfactory ($r = .93$).

Procedure

Following the diagnostic and pretreatment assessments, baseline measures were recorded for each child in a staggered baseline fashion ranging from 1 to 4 weeks. The initiation of the first treatment phase, therapist-assisted in vivo and imaginal ERP was staggered across persons in multiple baseline fashion with the ordering of the children randomized. The initiation of the

second treatment phase, the addition of parent involvement to the ERP treatment, was staggered across persons approximately 2 weeks after the initiation of the first phase. Maintenance treatment was initiated approximately 2 weeks after the initiation of the second phase. Throughout the study the timing of phase changes was dependent on participant progress.

Treatment Protocol

Treatment consisted of three components: imaginal and in vivo ERP, ERP plus parent involvement, and maintenance treatment. ERP progressed from the lowest to the highest hierarchy item and was administered in 12 sessions held three times weekly. When exposure items were not available in the clinical setting, both imaginal and in vivo exposure were conducted in the child's home. A 5-minute imaginal exposure script containing obsessive thoughts, prevented compulsions, and feared consequences was read to the child. SUDS ratings were taken at the conclusion of each repetition of the script. Imaginal exposure scripts were audio-taped during the session for use in homework assignments. Imaginal exposure was followed immediately by in vivo exposure to the hierarchy item, e.g., touching objects believed by the child to be contaminating. SUDS ratings were taken at 5-minute intervals. Imaginal and in vivo exposures continued until a SUDS rating of 25% or less the peak rating had been achieved or until the allotted session time had expired. Sessions were typically 90 minutes in duration. Response prevention was imposed continuously for each hierarchy item from the first exposure to the item through the end of treatment. Daily imaginal and in vivo exposure and response prevention homework assignments identical to in-session exposures were given.

With the initiation of the parent component, parent sessions were held three times weekly immediately following each child session for a total of six sessions. Child sessions were conducted in the same manner as in the previous treatment phase. Parents were given psychoeducation, training in the administration of home-based ERP, and training in the application of differential reinforcement techniques to ignore child compulsions and requests for reassurance or assistance with compulsions and to reinforce adaptive child coping responses. During the final portion of each parent session, parents practiced treatment procedures with their child through role play while the therapist gave corrective feedback. Parents began administering the exposure homework following the first parent session. Both parents attended sessions and participated in monitoring and homework assignments whenever possible. The father of the fourth child worked during the weekday hours that the child was home from school, and he was thus unavailable for sessions or weekday homework assignments. The child's mother was asked to review the content of parent sessions with her husband. Maternal monitoring suggested that the father was minimally involved in the child's rituals and complied with treatment techniques.

At the conclusion of the ERP and parent involvement components, six maintenance sessions were given, four weekly and two every other week.

During maintenance treatment, the child and parents were given instruction in the functional relationships between OCD symptoms, the treatment rationale in detail as applied to these functional relationships, and relapse prevention training. Using flowcharts and drawings, the child was guided through a description of the relationship between the obsessive compulsive symptoms and the application of the treatment components to those symptoms. Instruction was given in the application of treatment components to the occurrence of new symptoms or resurgence of treated symptoms. At the conclusion of each session, the child reviewed session content with the parents, and parental concerns were addressed. In addition, any overly strict response prevention rules were relaxed to normal limits, and tangible reinforcement was phased out.

Treatment was administered by the first author, a doctoral student. The therapist followed a detailed treatment manual (Knox, Albano, & Barlow, 1991), and received weekly supervision.

Results

Frequency of Compulsions

Figure 1 presents the composite child and parent frequency data. Considerable intraindividual variability is present in the frequency data. Janosky (1992) recommends the use of a nonparametric sequential smoother when irregular variability is sufficient to obscure any changes in level or slope. The recommended minimum number of data points per phase is six. The smoothed data presented in Figure 1 were smoothed within phase using a T4253H smoothing procedure (Statistical Packages for the Social Sciences, 1993). Missing data points were replaced with the means of adjacent points before the procedure was begun. The smoothing procedure uses a running median of four, centered by a running median of two on the first pass through the data. The process is then repeated using a running median of five, centered by three. Residuals are obtained by subtracting the resulting values from the original data. The smoothing process is then repeated on the residuals and the smoothed residuals are added to the smoothed values. This results in a relatively smooth curve, facilitating visual inspection of the data.

All children and their parents reported an immediate yet unstable decrease in the frequency of compulsions with the initiation of baseline self-monitoring. In addition, the parents of the second child reported that spitting completely remitted although reassurance-seeking continued at premonitoring levels. Baseline data for the fourth child was confounded by the discontinuation of his medication, along with reactivity to the monitoring. During week three, maternal reports indicated that the fourth child decreased compulsions so that he would have less to write on his monitoring forms. The reactivity reversed with the initiation of ERP.

During the second week of the ERP phase, the parents of the second child began to refuse to respond to the subject's requests for reassurance to all hier-

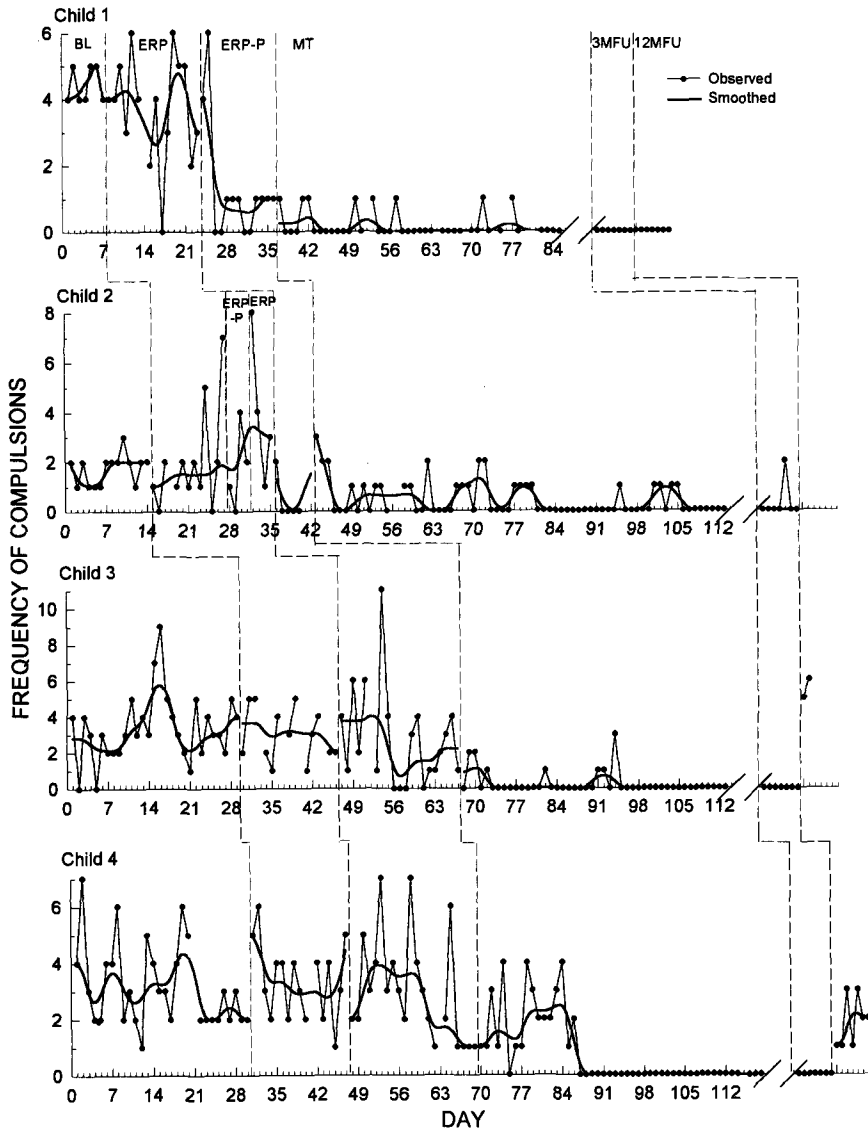


FIG. 1. Frequency of compulsions across baseline (BL), exposure and response prevention (ERP), ERP plus parent involvement (ERP-P), maintenance (MT) phases, at 3-month follow up (3MFU), and 12 month follow up (12MFU).

archy items. This was not suggested by, nor initially reported to, the therapist. Although spitting behavior had dropped out with the initiation of baseline monitoring, the child reported that spitting had recurred with increasing frequency. With the apparent deterioration in condition, a clinical decision was made to begin parent training. After parent training was begun, the premature initiation of parent-imposed response prevention was admitted by child and parents. Upon further questioning it became apparent that response prevention was being applied unsystematically in that the parents did not invariably refuse reassurance and frequently accompanied their child into anxiety-provoking situations. A reversal to the first phase was initiated, with the exposure item held constant, and parents were instructed to respond to reassurance as they had previously. When behavior returned to previous levels, parent training was again initiated, this time with instructions to the parents to maintain response prevention consistently for the current and all previous hierarchy items. An immediate drop in frequency was observed by the 36th day of the treatment program.

Across children, inspection of the observed and smoothed data suggests that ERP without parent involvement had either no effect on the frequency of compulsions or increased variability without affecting level or trend. Although ERP alone was ineffective, an immediate drop followed the addition of parent training to treatment for the first and second children. These results for the first and second children were maintained through the maintenance phase and at follow up. The responses of the third and fourth children were more complex. The addition of parents in treatment was followed by an initial increase in the frequency of compulsions, followed by a slow and variable decrease. The parents of the third child reported that full compliance with exposure homework was only obtained during the parent training phase. Frequency dropped again during the maintenance treatment phase, and gains were maintained at 3-month follow up. Nevertheless, gains were not maintained through 12-month follow up (see Figure 1). Parent monitoring forms for the fourth child indicated that the subject's mother was having some difficulty in ignoring the child's compulsions and was instead instructing him to use his treatment skills. With repetition and emphasis on the need for a complete lack of attention to compulsions, she was better able to comply with differential reinforcement techniques, and a gradual decrease in the frequency of compulsions was observed. Gains were completely maintained at 3-month follow up and partially maintained at 12-month follow up.

Habituation Patterns

With the exception of early sessions for the third and fourth child, habituation to exposure items was achieved within session for all children during both imaginal and in vivo exposure (Figure 2). For the most part, SUDS levels during both imaginal and in vivo exposure show a curvilinear pattern within the session. Habituation was achieved across exposure sessions despite the progression through the hierarchy of increasingly anxiety-provoking items.

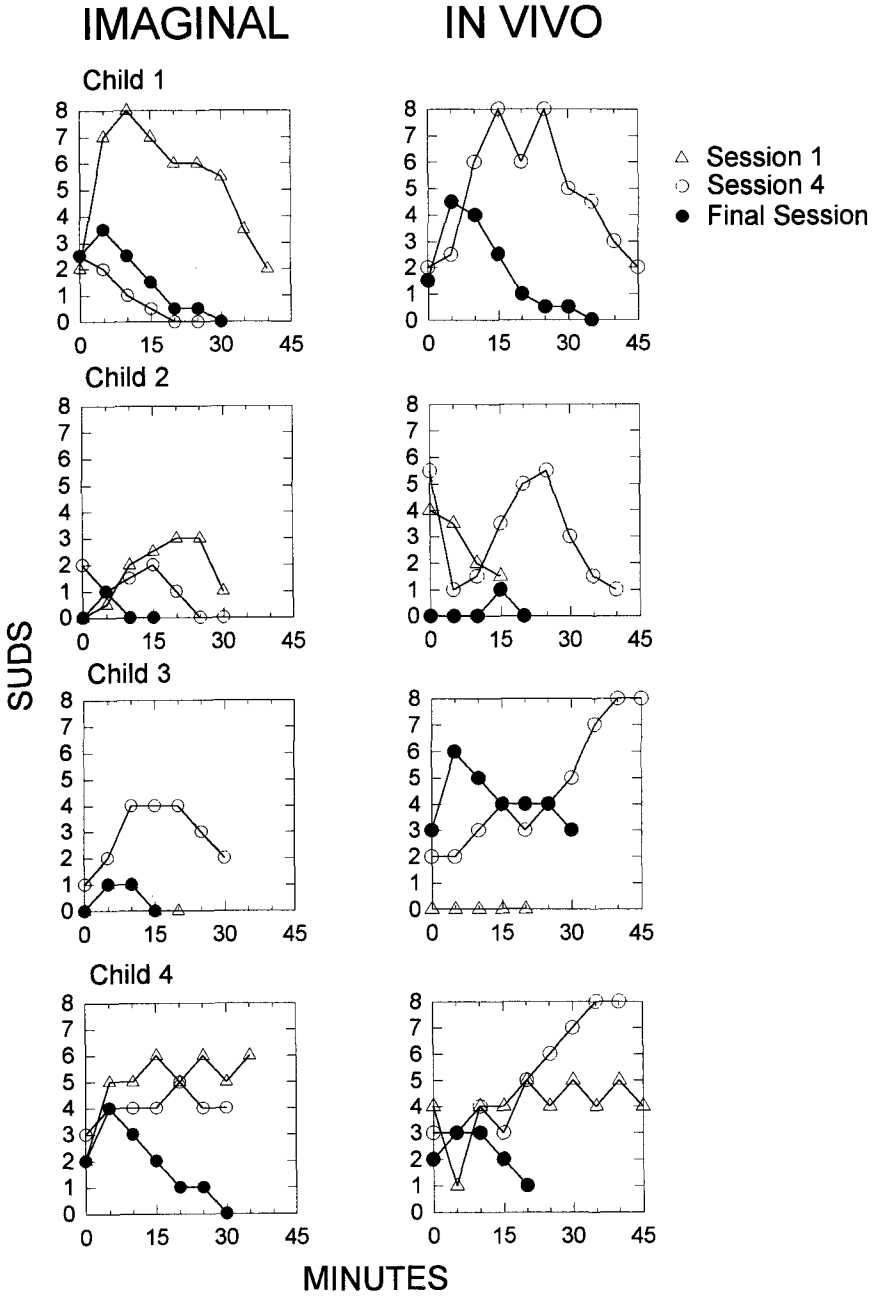


FIG. 2. Within- and between-session habituation for imaginal and in vivo exposures.

In addition to the lower peak SUDS ratings given by children during later exposures, the length of time spent at high SUDS levels also decreased from that observed in earlier exposures. These curves are similar to those reported by Foa and colleagues (Foa & Chambless, 1978; Grayson, Foa, & Steketee, 1982, 1986). Habituation across sessions is also reflected when children's daily SUDS ratings are averaged across hierarchy items (Figure 3). Unlike the frequency data, these ratings show a relatively steady decline from the initiation of the first treatment phase. No changes in level or trend were observed at phase changes.

Diagnostic and Self-Report Measures

All children participated in diagnostic and pretreatment assessments, and all were asked to undergo posttreatment and 3- and 12-month follow-up assessments. LOI-CV scores were not obtained for the first child at post-assessment or for the fourth child at 3-month follow up. The second child refused 12-month follow up due to parental fears that the assessment procedure would remind him of past symptomatology and would result in relapse. During telephone contact his parents reported that he was completely asymptomatic. The third child was unavailable for posttreatment assessment, but all measures were obtained at the 3- and 12-month follow ups.

Diagnoses and clinical severity ratings for each child are presented in Table 1. Each child received a clinical diagnosis of OCD at pretreatment. Diagnostic results support the frequency data in that no clinical diagnosis of OCD was given at posttreatment or 3-month follow up. Although no child was completely symptom-free, residual symptoms were judged by independent evaluators to result in insufficient distress and impairment to warrant clinical diagnosis or further treatment. At 12-month follow up, only the third child received a clinical diagnosis of OCD. Although not targeted in treatment, additional diagnoses showed some degree of remission, with only the fourth child receiving any clinical diagnosis at posttreatment or 12-month follow up. No additional diagnoses remained at clinical levels at 3-month follow up.

The first child received comorbid diagnoses of OCD and Overanxious Disorder (OAD) at pretreatment, with only subclinical symptoms noted for any diagnosis at posttreatment and 3-month follow up. Full remission of all symptoms was noted in her 12-month follow up. The second child received a comorbid diagnosis of Separation Anxiety Disorder (SAD) at pretreatment, with no further comorbidity noted at the posttreatment or 3-month follow up (the parents refused 12-month follow up). The third child presented with ADHD controlled by medication. At intake, his ADHD was described by his parents as a past diagnosis. By 12-month follow up, a relapse of OCD was observed, along with symptoms of emerging Tourette's Disorder. Parental report upon interview indicated that he had received a diagnosis from a psychiatrist of Tourette's disorder and an acute exacerbation in OCD symptoms at approximately nine months posttreatment following the onset of several

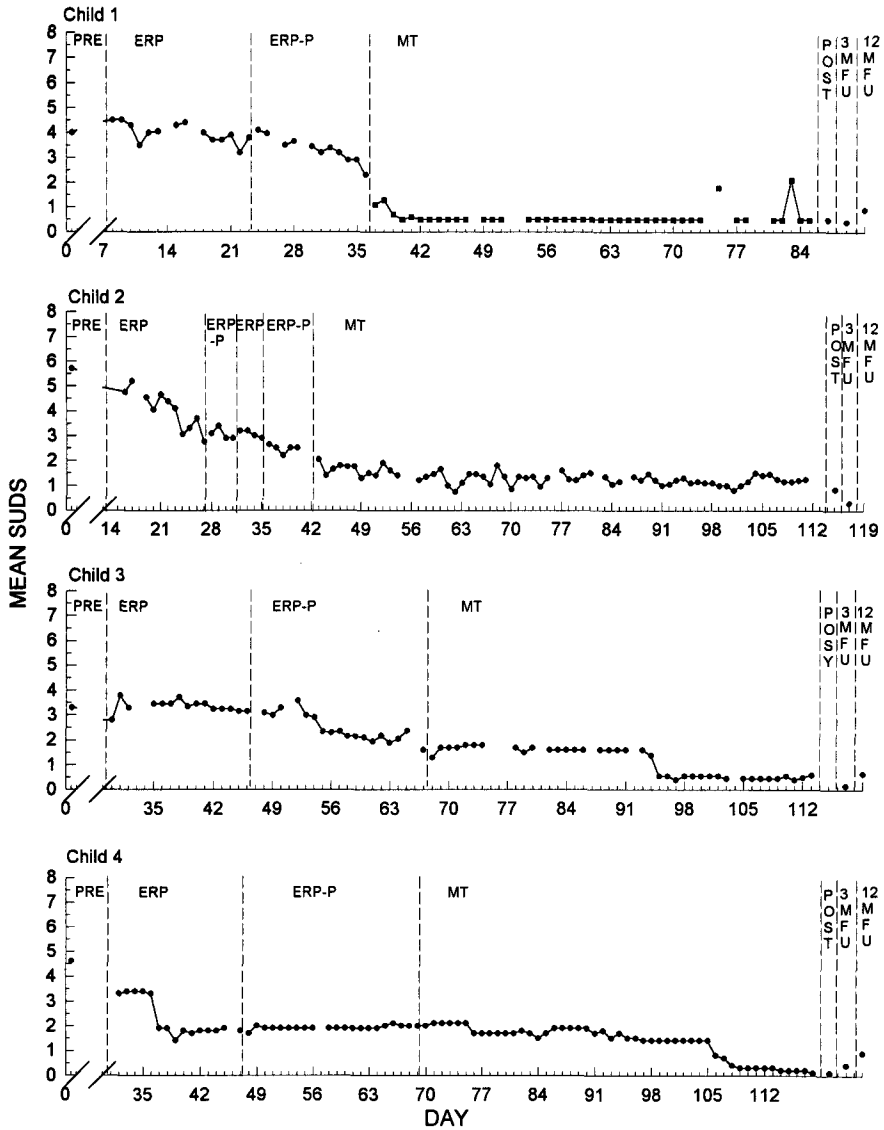


FIG. 3. Mean Subjective Units of Distress (SUDS) at pretreatment (PRE), across ERP, ERP-P, MT phases, at posttreatment (POST), 3MFU, and 12MFU.

TABLE 1
DIAGNOSES AND CLINICAL SEVERITY RATINGS (CSR)

	Child			
	1	2	3	4
Pretreatment	OCD (5) OAD (4)	OCD (6) SAD (5)	OCD (5) Social phobia (3) past ADHD	OCD (7) OAD (6) Tourette's (5) SAD (5) Enuresis (5) Simple (5) Dysthymia (4)
Posttreatment	Simple (3) OAD (3) OCD (2)	OCD (3)	—	Anx NOS (4) Tourette's (3) Simple (3) OCD (2)
3 month	OCD (2) OAD (2)	OCD (2)	OCD (3) ADHD—not assessed	OCD (2)
12 month	No mental disorder	—	OCD (6) Tourette's (3) ADHD (3)	OAD (5) OCD (3)

Note. CSR = 0–8. CSR \geq 4 denotes clinical diagnosis. CSR < 4 denotes subclinical symptoms. Abbreviated diagnoses: Simple Phobia (Simple); Overanxious Disorder (OAD); Attention-Deficit Hyperactivity Disorder (ADHD); Anxiety Disorder Not Otherwise Specified (Anx NOS); Separation Anxiety Disorder (SAD).

stressors, including a move to a new residence and school district. At 12-month follow up, tics were controlled by clonidine, but OCD symptoms remained at clinical levels of distress and interference. The subject was offered additional treatment, but refused. The most complicated diagnostic picture was presented in the fourth child, with comorbid diagnoses of OCD, OAD, Tourette's, SAD, simple phobia, dysthymia, and enuresis. At posttreatment, only a residual category of anxiety disorder not otherwise specified was assigned at a clinical level. At 12-month follow up, the child received a clinical diagnosis of OAD, however OCD remained at subclinical levels. Moreover, the Tourette's disorder, which was not a focus of treatment, remained in remission throughout the follow-up period.

Pretreatment scores on the LOI-CV were generally within the range commonly obtained by children with OCD, although the third child received scores within normal range on all subscales (Table 2). Scores at posttreatment and follow-up assessments show greater variability. Scores for the first child at 3-month follow up and the fourth child at 12-month follow up are inconsistent with diagnostic and frequency data in that they do not show expected declines.

TABLE 2
LEYTON OBSESSIONAL INVENTORY—CHILD VERSION

Subscale		Child			
		1	2	3	4
Yes	Pretreatment	17	17	10	14
	Posttreatment	—	7	—	3
	3 month	17	1	1	—
	12 month	12	—	4	11
Resistance	Pretreatment	21	20	9	24
	Posttreatment	—	3	—	1
	3 month	24	0	0	—
	12 month	6	—	6	15
Interference	Pretreatment	24	8	3	13
	Posttreatment	—	2	—	1
	3 month	9	0	0	—
	12 month	8	—	3	21

Scores for the third child at 12-month follow up do not show the increases that would be expected, given relapse. Overlapping score ranges were found on the LOI-CV by Berg et al. (1986), and they recommend that multiple measures of assessment be utilized in the diagnosis and assessment of change in childhood OCD.

Discussion

ERP alone had either no effect on the frequency of compulsions or increased variability without affecting level or trend. For the first two children, the greatest decrease in the frequency of compulsions occurred after the second parent session, during which parent-imposed positive reinforcement was initiated. Several factors may have been influential in achieving this effect. First, with the initiation of parent involvement in exposure homework and the initiation of positive reinforcement, parents may have become disengaged from the compulsive rituals. They may have ceased participation in compulsive behaviors, and begun reinforcing more adaptive coping behaviors. Second, positive reinforcement may have enhanced the children's compliance with response prevention rules. With their focus on the immediate, children and adolescents may have difficulty maintaining their motivation to endure unpleasant stimuli without resorting to rituals, solely on the basis of hoped-for long-term treatment gain. Positive reinforcement may have acted as a more concrete and immediate motivation. Third, parents may only have achieved sufficient proficiency in ERP techniques following the second parent session, and the decrease in frequency may be a delayed treatment effect. The present study does not allow discrimination of the influence of these factors.

The smoothed data for the third and fourth children suggest an initial increase in compulsions following the initiation of the parent phase. It is possible that this increase in frequency may reflect an extinction burst in response to the implementation of differential reinforcement. A gradual and variable decrease in frequency followed and continued into the maintenance treatment phase. Although neither child received a clinical diagnosis of a disruptive behavior disorder, externalizing behaviors were noted at pretreatment for both children. The third child presented with attention deficit hyperactivity disorder controlled by methylphenidate. Oppositional behavior and the possibility of attention deficit hyperactivity disorder were noted at pretreatment for the fourth child, but insufficient information was obtained to assign distinct diagnoses separate from the numerous assigned comorbid diagnoses. In addition, oppositional and attention-seeking behaviors by both children were observed throughout treatment. Although only extremely tentative hypotheses may be offered here, the possible impact of the presence of externalizing behaviors upon treatment response merits further investigation.

ERP holds promise as an efficacious method of treating childhood OCD, however the addition of parent involvement may be a necessary component of the treatment. This is consistent with the hypothesis that parental engagement in child compulsions and avoidance must be addressed before full exposure and habituation may be achieved. Also consistent with this hypothesis is the observation that parental involvement in OCD symptoms was observed for all children. However, the inclusion of the parents in treatment occurred before a full course of treatment with ERP was applied; therefore, it cannot be determined from this study whether another two weeks of simple ERP would have been effective eventually.

Habituation curves were similar to those reported in the adult literature, suggesting that similar processes may exist in children. However, these children habituated to exposure items more quickly than in the typical 60 to 90 minutes required by adults (Foa, Steketee, & Ozarow, 1985; Steketee & Foa, 1985). Foa and Kozak (1986) hypothesize that simple, coherent fears, such as phobias, may be more readily accessed and require shorter exposure duration than complex, diffuse fears, such as obsessions. Similarly, children may possess simpler and more coherent obsessive fears than adult obsessive compulsives, and thus may achieve emotional processing more rapidly.

Although habituation within and across imaginal and in vivo exposure sessions was evident for all children, the first child reported higher SUDS levels, in general, during exposures, and evidenced greater habituation across sessions than the remaining subjects. This pattern of higher SUDS levels and greater habituation is similar to that seen in the adult literature (Kozak, Foa, & Steketee, 1988). This suggests that higher fear responses may be related to greater across-session habituation in children, as in adults. Contrary to these reports in the adult literature, higher fear responses and inter-session habituation did not appear to be related to lower posttreatment ratings of fear, in that all children achieved extremely low posttreatment SUDS ratings.

Process Issues

The behavior of the first child (age 8 years) during exposure sessions was consistent with her SUDS ratings. During the first imaginal exposure she evidenced great distress by crying and shaking, and the presence of her mother during this session was necessary to prevent her complete escape from the exposure. This is contrary to the observation by Foa and Chambless (1978) that the first exposure session serves merely to acquaint the client with the exposure procedures and that high fear responses and habituation are seen only in succeeding sessions. It is possible that younger children have fewer cognitive coping mechanisms to employ against the anxiety provoked by the exposures, and thus experience the immediate effects of the exposure more fully.

Although the first child experienced a greater degree of habituation than did the other children, she had difficulty benefiting from these experiences, and reported experiencing moderately high levels of anxiety during day-to-day contact with hierarchy items during the maintenance phase of treatment. When the treatment rationale and the importance of continued exposures and compliance with response prevention was reviewed, it became evident that she had no easily accessible memory of the habituation she had experienced during the active exposure phases of treatment. Instead, she reported that she had experienced high levels of fear to each hierarchy item during all exposure sessions, and expected to continue this experience indefinitely. Upon further expansion and review of the treatment rationale, she appeared to grasp the basic processes occurring during habituation, and appeared to be applying them to her daily experiences. Thus, developmental limitations may have enhanced the anxiety-reducing effects of exposure but reduced the effects of habituation on emotional processing.

In contrast, the second child, at age 13 years, appeared to utilize more sophisticated cognitions to cope with the anxiety provoked by exposure sessions. The therapist acted as a safety cue; the child reported that he was safe during exposures, because the therapist would not permit anything bad to happen to him. To achieve a fear response to the exposures, it was necessary for the therapist to leave the room and view the child through an observation window or an adjoining room, returning only to take brief SUDS ratings. In addition, the child frequently stated that the imaginal exposure scripts did not seem real because he would not engage in the activity in real life, despite the fact that he was aware that he would be asked to engage in the exposure activity both during session and as a homework assignment. These statements were viewed as a subtle form of reassurance seeking, and the therapist refused to comply with these attempts by withholding confirmation of his surmises and by instructing him to block these thoughts and to concentrate on the reality of the exposure and its similarity to daily contacts with the hierarchy item. Nevertheless, this child's greater sophistication may have acted to circumvent the effectiveness of the exposure sessions by reducing the level of anxiety experienced.

The second child had no difficulty comprehending the treatment rationale

or understanding its significance in daily contacts with hierarchy items. He was able to verbalize clearly throughout treatment a simplified version of immediate and long-term habituation processes. However, his experiences did not appear to modify his belief in the feared disastrous consequences of exposure without compulsions. The strength of these beliefs may also have acted to delay the reduction in his daily SUDS ratings. Nevertheless, at 3-month follow up, he stated that while the obsessions still occurred, they no longer bothered him as much or caused great anxiety, and he no longer believed that the feared consequences might occur.

The third child exhibited extensive overt behavioral avoidance. As individual exposure items were approached, he often denied experiencing any difficulty with the approaching item. At the same time he consistently endorsed the overall problem with OCD and adamantly stated that he wanted help overcoming the compulsions. Attention-seeking, oppositional behavior, and attempts to "split" the therapist and parents were often evident in sessions. During the ERP, several sessions were terminated when he refused full compliance with the response prevention rules. With the initiation of parent involvement in treatment, full compliance with exposures was achieved. However, attention-seeking and oppositional behavior continued throughout treatment. He appeared to have no difficulty understanding the treatment rationale in the abstract. Nevertheless, he entered the maintenance treatment phase with the expressed conviction that the hierarchy items had never been very problematic, and that relapse prevention work was unnecessary.

The fourth child also exhibited extensive behavioral and cognitive avoidance during exposures. During initial sessions, he employed distraction during imaginal exposures and abbreviated compulsions during in vivo exposures. In addition, attention-seeking and oppositional behavior were evident during both imaginal and in vivo exposures. When an exposure was terminated due to noncompliance with response prevention rules, he elected to reinstate the exposure and subsequently complied fully with the protocol. As adherence increased, both within- and between-session habituation began to occur, and he began to grasp the treatment rationale. Moreover, his belief in feared consequences was modified so completely that when a family member was involved in an accident (one of his obsessive fears), he spontaneously explained why refraining from compulsions had no relation to the accident.

Future Research

Although the results of the current study suggest that ERP with the addition of parent involvement may be efficacious in the treatment of childhood OCD, several methodological weaknesses should be addressed in future research. First, parent involvement in treatment was initiated before a full course of ERP. The sharp drop in compulsions observed with the initiation of parent involvement for the first two children would suggest that the inclusion of parents in treatment had good effects beyond those that would be expected from delayed treatment or order effects. Nevertheless, delayed or order effects

cannot be completely ruled out by this design. A study utilizing group comparisons of children treated with and without parent involvement would address this concern.

In addition, the increase in the frequency of compulsions observed for the third and fourth child following the addition of parent involvement highlights the need for investigation of the impact upon treatment of such child factors as comorbidity. There are suggestions that externalizing behaviors may have impacted response to treatment for these two children, but this cannot be conclusively inferred from the results. It is also reasonable that such parental factors as psychopathology may impact negatively on the successful delivery of the parent component of treatment. The impact of parental factors and parent-child relationship factors also merit attention in future research.

Some interesting questions regarding the effects of cognitive development are raised by the process issues described above. A review of the literature has revealed no studies investigating developmental effects on emotional processing. The present results suggest that habituation patterns in children may be quite similar to those observed in adults. Nevertheless, the ways in which children incorporate the corrective information obtained through exposure experiences may be quite different depending upon developmental level. Such issues might have unforeseen effects upon treatment gains and their maintenance. Although informal observations from the present study suggest that cognitive development may impact on emotional processing, data from such a limited number of children can do no more than suggest extremely tentative hypotheses.

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