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Predictors and Correlates of Completing Behavioral Parent Training for the Treatment of Oppositional Defiant Disorder in Pediatric Primary Care

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Abstract

This study examined the role of pretreatment demographic and clinical predictors of attendance as well as barriers to treatment and consumer satisfaction on attendance at therapist-led parent training with 86 families of children ages 3 to 6 years conducted in pediatric primary care settings. Only socioeconomic status (SES) and minority group membership were significantly associated with not completing treatment. Using optimal data analyses procedures, high SES correctly predicted treatment completion 83.6% of the time. Being from a low SES, minority group family correctly predicted noncompletion of treatment 72.7% of the time, but being from a low SES, white family predicted treatment completion 80% of the time. Since barriers to treatment, such as stressors, obstacles to treatment, and treatment demands were unrelated to attendance in the present study, other factors related to social class and minority status that could contribute to better consumer satisfaction and treatment attendance must be investigated.

Oppositional defiant disorder (ODD) is the most common disorder of preschool children, with prevalence ranging from 4.0% to 16.8%, depending upon diagnostic procedures and

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level of impairment required for diagnosis (Egger & Angold, 2006; Lavigne, LeBailly, Hopkins, Gouze, & Binns, in press). Prevalence in preschoolers is high across racial/ethnic groups and does not differ across White, African American, and non-Hispanic White groups (Lavigne et al., in press). Although many preschoolers showing symptoms of ODD improve, overall the disorder is relatively stable. In community samples, 33% of children with ODD as preschoolers retained that diagnosis 5 years later, and 67% of preschoolers with ODD diagnosed in two consecutive years maintained an ODD diagnosis the subsequent year (Lavigne, Arend, et al., 1998a, 1998b). Early-onset ODD has considerable social significance: ODD in preschoolers becomes increasingly resistant to change after 6 years of age (Spelz, McClellan, Deklyen, & Jones, 1999) and is often a precursor to conduct disorder (CD), with early-onset CD having more severe consequences than late-onset CD (Campbell & Ewing, 1990), including adolescent drug/alcohol abuse, and depression (Loeber, 1982; Moffitt, Caspi, Dickson, Silva, & Stanton, 1996). With effective treatment becoming increasingly difficult to implement as children grow older, the need for effective early intervention is clear.

Presently, parent management training (PMT) with young children is one of the most thoroughly researched and validated interventions for disruptive behavior disorders, including ODD (Brestan & Eyberg, 1998; Kazdin, 1997). This approach teaches principles of behavior and social learning theory and specific parenting skills to improve parent-child relationships, maximize child compliance, and minimize disruptive behavior.

In spite of its status as an empirically supported treatment for ODD and related problems, there are problems with the practical implementation of PMT, as well as with other forms of child treatment. In particular, dropping out of outpatient child psychotherapy is a significant problem: estimates of premature termination are as high as 48% to 60%, and termination within five treatment sessions is not uncommon (Armbruster & Kazdin, 1994). At a time when the importance of using empirically supported treatments is increasingly emphasized, and many such programs involve 12 or more treatment sessions, concern that many children will not get a sufficient treatment “dose” seems justified. For example, Weisz, Thurber, Sweeney, Proffitt, and LeGagnoux (1997) found that child outpatients attended fewer than 10 treatment sessions on average, considerably less than the 12 to 20 sessions recommended in depression treatment studies.

There are few studies of the factors associated with treatment attrition or completion in child psychotherapy for internalizing disorders (Pina, Silverman, Weems, Kurtines, & Goldman, 2003). Pina et al. note that studies conducted in community-based clinics find few demographic or clinical characteristics associated with treatment completion. One university-based specialty clinic for anxiety disorders (Kendall & Sugarman, 1997), where randomized clinical trials are conducted, found that noncompleters were more likely to have been assigned to a wait-list control group, to come from single parent families, and to have lower levels of self-reported anxiety than were completers. There was a marginal finding that minority group families were more likely to be noncompleters (i.e., a significant finding but eliminated after Bonferroni corrections were applied). In another university-based anxiety clinic in which randomized controlled trials were conducted, Pina et al. (2003) found no differences between completers and noncompleters in age, gender, single-parent home status, income, race/ethnicity, diagnosis, or symptom measures.

Although the factors associated with attrition in the treatment of child externalizing problems have been studied more extensively, the number of studies is still quite limited. Reyno and McGrath (2006) conducted a meta-analysis of the 11 available studies of parent training for conduct problems. More than half of the studies have been conducted with one treatment program primarily designed for, and conducted with, school-age children and

young adolescents (Kazdin, Mazurick, & Bass, 1993; Kazdin & Wassell, 1998). Overall, the effect sizes for predictors of attrition were small for demographic variables, including single parent status, low family income, low parental education levels, young maternal age, minority group status, and life stresses (Reyno & McGrath, 2006).

The externalizing problems treated in parent training may differ by age group (Lahey, 1991), with older children more likely to engage in externalizing problems that include conduct-related behavioral problems such as aggression, lying, and stealing, whereas younger children are more likely to exhibit oppositional behavior and temper tantrums, with more severe conduct problems occurring at lower rates. Barriers to treatment may differ, with mothers of young children more likely to be at home with their young children rather than returning to the work force when the child enters school. Treatment responsiveness may also vary, with young children displaying less severe problems and responding more quickly to treatment.

Although such factors could influence attrition, little attention has been paid to factors predicting attrition from parent training for young children. Two studies noted by Reyno and McGrath focused exclusively on young children, with Copage, Bennett, and McNeil (2001) reporting that single parent status, low family income, and minority group status were associated with noncompletion, and McMahon, Forehand, Griest, and Wells (1981) reporting that low parental education was associated with noncompletion of treatment. Consistent with these reports, Dumas, Nissley-Tsiopinis, and Moreland (2006) found that mothers with higher income had better attendance; in contrast to the report by Copage et al. (2001), however, Dumas et al. (2006) found that attendance was greater among single parents.

Only one study of attrition from parent training with young children has addressed parental characteristics or behaviors. Werba et al. (2006) found marginally significant ($p < .10$) results for maternal depression and parental stress as predictors of attrition. Only direct command ratio (i.e., clear, direct commands divided by total commands) differentiated dropout from completion at the $p < .05$ level, with noncompleters showing a higher command ratio. With over 20 comparisons conducted in that study, it is unclear whether the latter would have been significant if a correction for multiple comparisons were used.

Kazdin, Holland, Crowley, and Breton (1997) and Pina et al. (2003) both argue that studies need to move beyond the examination of the demographic and clinical characteristics previously studied to understand attrition from treatment. Kazdin et al. (1997) developed a barriers-to-treatment model, arguing that families experience a variety of barriers that prevent treatment participation, and developed an accompanying scale, the Barriers to Participation Scale (BTPS). The scale includes four different types of barriers: stressors and obstacles that compete with treatment (e.g., transportation problems, illness, problems with appointment times); treatment demands and issues (e.g., treatment lasted too long, more work than expected); perceived relevance of treatment (e.g., treatment did not seem necessary, lost interest); relationship with the therapist (e.g., did not like the therapist, did not feel the therapist supported me); and an additional critical events scale (e.g., relocated, lost job). Kazdin et al. report that a higher number of barriers was associated with dropping out and added significant information for predicting participation beyond that associated with demographic characteristics. As they note, however, their results may be specific to a conduct disorder clinic with primarily school-age and young adolescent patients. Pina et al. emphasize the importance of examining the “robustness of these findings using independent samples drawn from different clinics.” Indeed, Stevens, Kelleher, Ward-Estes, and Hayes (2006) found that previously robust predictors of psychotherapy dropout (minority status and low SES) were not consistently associated with either perceived treatment barriers or

indices of treatment participation. Only one study of parent training with young children (Dumas et al., 2006) found that parental time and scheduling constraints predicted attrition. Studies are needed to determine whether a broader range of barriers affects attendance at parent training for young children.

Werba et al. (2006) make a useful distinction between pretreatment predictors of dropout and those predictors that can be measured only during or after treatment. Pretreatment indicators are particularly useful for identifying families at risk for dropping out early and tailoring treatment to their needs. Identifying barriers occurring during treatment or consumer satisfaction measured after treatment may be useful in modifying the interventions for families treated subsequently. Thus, both identifying pretreatment predictors and those occurring during treatment are important but have slightly different benefits.

One problem with treatment completion studies in child psychotherapy relates to the definition of dropout. Studies with a defined number of treatment sessions tend to define completion based on attendance at an arbitrary number of sessions, usually 10 of 12. No attention is paid to whether there is a “dose effect,” so it is unclear whether completing 10 sessions is different than, say, completing 8 or all 12. In understanding what factors are important for getting an adequate dose of treatment, an empirical approach to deciding what “completion” is would be preferable.

DOSE EFFECTS FOR PARENT TRAINING IN PEDIATRIC PRIMARY CARE

A recent study (Lavigne, LeBailly, Gouze, Cicchetti, Jessup et al., 2008; Lavigne, LeBailly, Gouze, Cicchetti, Pochyly et al., 2008) of behavioral parent training for treating ODD in pediatric primary care illustrates the value of examining dose effects in treatment when considering the importance of treatment attendance. In that study, families of children with ODD were identified in Chicago-area pediatric practices and enrolled through a two-step process. The first step included office-based screening, with eligible children obtaining parent-rated externalizing scores at or above the 90th percentile on the Child Behavior Checklist (CBCL; Achenbach, 1991). Interested screen-high families then participated in a second stage evaluation in which a battery of measures were administered, including the Rochester Adaptive Behavior Inventory (Jones, 1977) for parents of preschoolers, the Eyberg scale (Eyberg & Pincus, 1999), the CBCL (Achenbach, 1991), and a videotape of parent-child interaction tasks (Forehand & McMahon, 1981) was reviewed. Two doctoral-level psychologists subsequently reviewed the test battery, assigned a diagnosis, and met to achieve a consensus diagnosis when independent diagnoses disagreed. The reliability (Lavigne et al., 1994) and predictive validity of this procedure was established (Lavigne, Arend et al., 1998a).

There were 24 pediatric practices stratified according to demographic characteristics (three clinics serving low-income families, 21 private practice groups) and randomly assigned by practice to one of three intervention groups with eight practices per group. The three intervention groups included: (a) a minimally intensive treatment (MIT) (bibliotherapy group, with families receiving a copy of Webster-Stratton's *The Incredible Years* (Webster-Stratton, 1992) that involved no therapist contact; (b) a parent training intervention using the 12-session Incredible Years treatment program (Webster-Stratton, 1997) delivered by a nurse; or (c) the identical Incredible Years program led by a doctoral-level clinical psychologist. Therapist-led treatments were conducted in the primary care settings. All therapists were trained in the Webster-Stratton intervention by attending a 6-hour training seminar, followed by supervision on two cases by two trainers with extensive experience in parent training for ODD. To maintain treatment integrity following the initial training, therapists followed a treatment manual and used a standard set of videotaped vignettes that

form the core of the Incredible Years intervention, completed weekly checklists of principles covered in each session, and provided audiotapes of sessions for review at regular supervisory meetings that continued throughout the intervention. Audiotapes were reviewed by a master trainer for each therapist for one full case, and a randomly selected 10% of tapes were reviewed by both of the master raters. In assessing interrater agreement, master raters examined (a) whether the major goals of the session were met and (b) if information inconsistent with the treatment was introduced by the trainer. Agreement on these major categories was 88% for meeting goals ($\kappa = .64$, $p = .001$). All goals were met in 94% of the sessions, and there was 100% agreement that no incompatible information was introduced by the trainers.

All three treatment groups improved (Table 1) on the two major outcome measures (CBCL externalizing and Eyberg scale) and, in intent-to-treat analyses, there were no overall differences in treatment outcome between families who received the minimally intensive treatment and those who received parent training led by a nurse or clinical psychologist. A no-treatment control was not included in the design because the empirical support for parent training is strong enough that withholding treatment had ethical implications at this time. It was, however, possible to benchmark the results of this study against a no-treatment control group employed in an earlier study (Webster-Stratton, 1982, 1997; Webster-Stratton, Kolpacoff, & Hollinsworth, 1988) using the Eyberg scales. Rates of improvement for all three treated groups in the Lavigne et al. study were comparable to the treated groups in the Webster-Stratton et al. studies, and 2 to 3 times larger than the wait-list controls at posttreatment in those studies.

There was, however, a dose effect associated with attending therapist-led treatment sessions (Table 1). Attendance at 7 or more therapist-led treatment sessions was associated with a better outcome on the Eyberg Scale than was MIT at posttreatment and follow-up, and attendance at 9 or more therapy sessions was associated with better outcome on both outcome measures. Thus, in this situation, predicting attendance at 7 or 9 sessions would be more important than predicting attendance at 10 or 12. Identifying factors related to attendance would help determine whether families would benefit from therapist-led treatment initially or might do better receiving the minimal intervention, thereby tailoring treatment to their needs as suggested by Werba et al. (2006).

EXAMINING PREDICTORS AND CORRELATES OF ATTENDANCE AT PARENT TRAINING SESSIONS

The present investigation extended the study reported by Lavigne and colleagues (Lavigne, LeBailly, Gouze, Cicchetti, Jessup et al., 2008; Lavigne, LeBailly, Gouze, Cicchetti, Pochyly et al., 2008) by: (a) examining factors associated with attendance at therapist-led treatments conducted in primary care, (b) examining factors associated with noncompletion beyond mental health settings, and (c) extending the limited number of studies of treatment completion in behavioral parent training of young children with ODD-related problems. Two approaches were taken. First, in one set of analyses, we examined only potential pretreatment predictors. Lacking a clear theoretical model of pretreatment predictors of attendance, we attempted to replicate the findings for factors identified previously, including factors associated with socioeconomic status, race/ethnicity, and problem severity. Second, as Kazdin et al. (1997) and Pina et al. (2003) suggested, it may be useful to extend our understanding of factors associated with dropout to factors other than demographic and clinical characteristics that could be assessed pretreatment. Thus, we also examined barriers to treatment and consumer satisfaction assessed posttreatment.

Method

PEDIATRIC PRACTICES

Patients from 24 Chicago-area pediatric practices participated in the study. Practices were stratified according to demographic characteristics, with 21 private practice groups and 3 clinics serving low-income families randomly assigned to an intervention group. There were 16 practices and clinics that contributed patients to one of the therapist-led treatments groups; 8 practices were randomly assigned to the MIT group. With the exception of a few patients who were seen in a local hospital when space precluded treatment at nearby practices at times convenient to the parent, all treatment was delivered in the primary care offices.

PARTICIPANTS

Children ages 3.0 to 6.11 years and their parents participated in the study. Children were eligible if they: (a) met *DSM-IV* criteria for ODD based on clinical consensus diagnoses; (b) had receptive language skills at or above the 24-month level; and (c) did not have a *DSM-IV* diagnosis that precludes the ODD diagnosis (e.g., autism). The medical center's Institutional Review Board approved the study.

As discussed in describing the parent study, a two-stage evaluation process was used, which involved screening in the primary care settings followed by a thorough second stage evaluation to confirm the diagnosis of ODD. Additional details of the procedure are available in Lavigne, LeBailly, Gouze, Cicchetti, Pochyly, et al. (2008).

Final Sample Characteristics—There were 49 families enrolled in the nurse treatment group, and 37 in the psychologist treatment group. The sample was 51.2% male ($n = 44$). Eleven children (12.7%) were identified by physician referral and 75 (87.3%) by screening. There were 23 (26.7%) minority children ($n = 15$, African American; $n = 7$, Hispanic; $n = 1$, Asian) and 63 (73.3%) non-Hispanic White children in the sample. There were 65 (81.2%) families in which the biological parents were married, whereas 5 (6.25%) were either divorced, separated, or remarried, and 10 (12.5%) never married (data on 6 families not provided). Parents were the primary caretakers in all families, and there were no same-sex couples in the sample. On the Hollingshead-Redlich scale (Hollingshead, 1975), the largest number were middle-class families (classes III and IV, $n = 51$, 59.3%), with both lower (classes I and II, $n = 6$, 7.0%) and upper-class families (class V, $n = 24$, 27.9%) represented. Five (5.8%) families did not provide data. The average age of the child was 4.6 years ($SD = 1.0$). There were 57 families who completed all posttreatment measures.

MEASURES

Eyberg Child Behavior Inventory (ECBI)—The ECBI (Eyberg & Pincus, 1999) is a parent-reported measure of child oppositional behavior widely used in studies of parent training for ODD symptoms. The intensity scale of the ECBI was used.

Child Behavior Checklist—The CBCL (Achenbach, 1991) provided an estimate of the child's overall levels of behavioral symptoms and measures of internalizing (i.e., anxiety, depression, and related problems) and externalizing (e.g., noncompliance, temper tantrums, aggression, etc.) symptoms. Because children were identified for study inclusion based on high CBCL externalizing scores, the pretreatment range of those scores was highly restricted; thus, that scale was not used in predicting attendance. Furthermore, because of the high correlation between the internalizing score and the total score ($r = .785$ in this sample), the use of both of these scales would have been redundant; thus, only the total score was used as a predictor.

Family Background Questionnaire—Parents completed a demographic questionnaire, including information on child's age, gender, race/ethnicity, as well as parental marital status, education, and employment, which were coded to assess socioeconomic status (Hollingshead, 1975).

Rochester Adaptive Behavior Inventory (RABI)—The RABI (Jones, 1977), a semistructured parent-completed interview, includes items on anxiety, mood, and disruptive disorders. It was reviewed by the clinicians assigning diagnoses. Agreement on diagnoses in our prior studies using this instrument was high (Yule's Y for specific diagnosis, .63–.99; Lavigne et al., 1994).

Observations of Parent-Child Interaction—Children and mothers were videotaped for 15 minutes while engaging in child- and parent-chosen activities, followed by a clean-up period. Following Forehand and McMahon's (1981) procedures, observers rated child compliance in 15-second intervals to two types of parental commands: (a) compliance to specifically stated maternal "alpha" commands (e.g., "Put your shoes in your closet."); (b) compliance to less specifically stated "beta" commands ("Would you put it away?" [when 'it' isn't clear]). Kappas are affected by base rates of observed behaviors, but were substantial (.60–.80; Landis & Koch, 1977) for alpha commands (.61) and moderate to substantial for compliance to alpha commands (.59). Because agreement was only fair (.35) for compliance to beta commands, that measure was eliminated. Alpha command compliance was expressed as the ratio of number of complies to number of commands ($M = .85$; $SD = .21$; range, 0 – 1.0).

Parenting Stress—The Parenting Stress Index Short Form total stress scale (Abidin, 1995) was used to assess the occurrence of life stresses before intervention.

Parental Depression—The Beck Depression Inventory (Beck & Steer, 1987) was used to assess maternal depression. This measure shows strong correlations with other major depression inventories, and was used to assess maternal depression.

Barriers to Treatment Participation Scale (BTPS)—The BTPS (Kazdin et al., 1997) is a measure of perceived barriers to participation in treatment, with four sections described earlier: stressors and obstacles, treatment demands and issues, perceived relevance of treatment, relationship with the therapist. Factor analysis indicates that a total barriers score is preferable to the separate factor scores. Internal consistency is high, and the total barriers score was a significant predictor of treatment attendance and completion..

Therapy Attitude Inventory (TAI)—The TAI (Brestan, Jacobs, Rayfield, & Eyberg, 1999) is a measure of consumer satisfaction with parent training. Factor analysis yielded two scales, one measuring process satisfaction (i.e., satisfaction with techniques taught and the "general feeling" of the program) and the other, outcome satisfaction.

Treatment completion—Because dose-effect analysis indicated that attendance at 7 or more treatment sessions produced a significant improvement on one outcome measure compared to a minimal intervention, attendance at 7 or more sessions was considered treatment completion in these analyses. Separate analyses of 9 or more sessions, the point at which change occurred on two outcome measures could also have been conducted, but were not to avoid doubling the number of study-wide analyses that were conducted.

PROCEDURE

Prospective participants were screened by research assistants at a pediatric practice, referred by a pediatrician, or self-referred after seeing a study-related brochure in the pediatric offices. As described in discussing the parent study, families of children who scored above the 90th percentile on the CBCL externalizing scale were invited to a second-stage evaluation and completed the semistructured evaluation battery. Subsequently, the two doctoral-level psychologists assigned the appropriate *DSM-IV* diagnoses independently and met to resolve any differences in diagnosis.

Measures of consumer satisfaction and barriers to treatment were administered at posttreatment. Questionnaires were not collected from fathers. Our prior work in primary care practices (Lavigne, Arend, et al., 1998a; Lavigne et al., 1993), including clinics serving families from lower socioeconomic backgrounds, had identified many families without fathers in the home; thus, we anticipated difficulties collecting and analyzing father-reported data. As a result, we elected not to increase participant burden by collecting data that we expected could not be analyzed. Because the study was conducted as an effectiveness trial with minimal inclusion criteria, we also elected not to restrict the sample to families in which a father was present. Prior studies have suggested that requiring father participation increases overrepresentation of European Americans in study samples, increases parental educational attainment and occupational status, and biases samples toward families with more enriching family environments, including mothers who are more responsive to their children (Costigan & Cox, 2001).

INTERVENTION

Intervention Leaders—In the nurse-led treatment condition, there were seven licensed registered nurses who provided treatment; in the psychologist-led treatment condition, there were five doctoral-level clinical child psychologists who provided treatment. Therapists were trained in the Webster-Stratton intervention by attending a 6-hour training seminar and participating in supervision on cases they treated. There were 11 non-Hispanic White therapists and 1 African American therapist.

Therapist-Led Treatment Conditions—The Webster-Stratton (1997) 12-session Incredible Years treatment program was used. This program used videotaped modeling and discussion of key parenting practices to improve parent-child interaction patterns and reduce oppositional behavior. Skills taught include the use of parental attention, praise, consequences and appropriate discipline techniques, including timeout, to manage the child's behavior. Therapists used a manual to guide discussion following the viewing of videotaped vignettes. The parents in the therapist-led interventions received a copy of Webster-Stratton's book *The Incredible Years* (Webster-Stratton, 1992) as well.

Minimal Intervention Treatment (MIT)—The third treatment group only received a copy of *The Incredible Years* and had no therapist contact. They did not attend sessions, and data from these families are not included in this report.

Length of Attendance—Parents attending therapist-led treatment sessions were given the option of attending 6 two-hour meetings, in which the content of two sessions was discussed at each, or 12 one-hour meetings at which the content of one session was reviewed. There were 69 (80.2%) families who chose 12 one-hour meetings; 17 (19.8%) selected 6 two-hour meetings.

STATISTICAL ANALYSIS

The first goal of the study was to examine pretreatment clinical and demographic predictors of treatment completion. Traditional inferential statistical procedures that are familiar to most readers, and that yield p values and effect sizes, could have been employed. This approach, however, is not ideal for programmatic clinical applications. If, for example, socioeconomic status (SES) were found to have a large effect size of, say, 0.7 in predicting treatment completion, it would still not be clear what would be the appropriate SES cutoff score to use for prediction, nor how many individuals would be correctly classified with that cutoff score. In contrast, optimal data analysis (ODA) is ideally suited for making such determinations.

ODA (Yarnold & Soltysik, 2005) identifies optimal cutoff scores for each predictor variable by using an exact permutation probability with no distributional assumptions. Each predictor variable is first analyzed individually (i.e., “uniODA” analyses) to determine if it can predict the target variable (i.e., completing seven or more sessions of material). Subsequently, “Jack-knife” leave-one-out (LOO) analyses are conducted to assess the likelihood of replicating the analysis of each predictor in an independent sample (Ostrander, Weinfurt, Yarnold, & August, 1998). Each observation in the LOO analysis is removed from the sample one at a time, the ODA decision rule is re-applied, the effectiveness of the rule is assessed, and the stability of the decision rule is evaluated. If the LOO analysis is not statistically significant, the results are considered unstable. To maximize the cross-sample generalizability from the present study, only analyses that demonstrated stability in the LOO analyses were considered significant. After analyzing individual predictors, a classification tree analysis (CTA; Donenberg, Bryant, Emerson, Wilson, & Pasch, 2003; Ostrander et al., 1998) was conducted. The CTA determines the combination of variables best predicting change. An optimal cut point is found for each predictor variable, and the best predictor retained as the first “branch.” Successive predictors are evaluated and entered into a “tree” to maximize their combined predictive accuracy. In addition, a Bonferroni-type, sequentially-rejective Sidak adjustment procedure (Yarnold & Soltysik, 2005) was applied to control for experiment-wise Type I error and to prune the classification tree. Each uniODA analysis and the final CTA model was evaluated based upon overall classification accuracy (the percentage of the total sample correctly classified by the tree model), sensitivity (the percentage of the participants who completed at least 7 sessions of material), specificity (the percentage of the participants who did not complete at least 7 sessions of material and who were correctly predicted not to have done so), and effect strength for sensitivity (ESS; an absolute index of effect size for which 0 equals performance expected by chance and 100 equals perfect classification accuracy). Following Yarnold and Soltysik (2005), ESS values less than 25% are considered weak; 25% to 50%, moderate; 50% to 75%, relatively strong; 75% to 90%, strong; greater than 90%, very strong.

An advantage to ODA is that it presents results in a manner that is relatively easy for clinicians to interpret (Yarnold & Soltysik, 2005). Clinicians often find research results to be lacking in clinical utility (Garland, Hurlburt, & Hawley, 2006). It is potentially easier, for example, for a clinician or clinic manager to make use of results identifying a specific percentage of children with a particular set of attributes who will complete treatment (e.g., 60% of families complete treatment A, whereas only 12% complete treatment B) than it may be to make use of results using more traditional analyses (e.g., percent of variance accounted for).

Because families who left treatment prematurely were less likely that treatment completers to complete the barriers to treatment and consumer satisfaction measures administered at posttreatment, we could not conduct group comparisons between those who completed 6 or fewer versus 7 or more sessions. To examine those relationships, we conducted Pearson

correlations between the total number of sessions of material completed with total barriers and consumer satisfaction scores.

Results

TREATMENT ATTENDANCE

Of the 86 participating families, 67 (77.9%) received 7 or more treatment sessions and 19 attended less than 7 sessions. Only 4 families who completed 7 or more treatment sessions did not complete 9 or more, so results would be expected to be essentially the same had 9 or more sessions been the criterion for treatment completion. There was no difference in the number of parents who completed at least 7 sessions of material between those selecting 12 one-hour meetings and those selecting 6 two-hour meetings ($n = 17$, 19.8%; $\chi^2 = 0.84$, $p = .36$). There was no difference in the amount of material covered between those attending 6 versus 12 meetings, $t(81) = 0.03$, $p = .98$. In addition, there were no differences in the number of sessions of material completed between the nurse-led and psychologist-led group, $t(81) = 0.66$, $p = .51$, nor between physician-referred and screen-identified children, $t(81) = 1.07$, $p = .29$.

COMPARISONS OF FAMILIES CHOOSING 6 VERSUS 12 VISITS ON BARRIERS TO TREATMENT

Families who chose 6 two-hour visits rather than 12 one-hour visits may have encountered fewer barriers to treatment, thereby affecting attendance. It would seem *prima facie* that attending 12 sessions would incur more contact with treatment barriers than attending 6 longer sessions, but allowing families to choose may have allowed them to “tailor” their choice and reduce variables (e.g., a parent with babysitter problems may have preferred 6 two-hour sessions; a parent who could “sneak in” one-hour sessions, but not longer ones, while siblings were at school may have avoided barriers that longer sessions may have imposed). If flexibility reduces barriers, barriers to treatment scores may not differ. The two groups did not differ in the barriers to treatment encountered, $t(57) = 0.99$, $p = .33$. Nor were there differences in treatment satisfaction with process, $t(57) = 1.64$, $p = .11$ or outcome, $t(57) = 0.36$, $p = .72$.

PRETREATMENT PREDICTORS

In single variable ODA, the results before correcting for multiple comparisons indicated that SES and race/ethnicity, mother’s education, and father’s education were all significant, stable, moderately strong predictors of treatment completion (Table 2). Being from one of the lower three social classes, or being a minority member were associated with not completing treatment, as were having less than a college degree for mothers and less than some college attendance for fathers. After correcting for multiple comparisons, however, only SES and race/ethnicity were significant. Child’s age, gender, parent marital status, CBCL total score, Eyberg intensity score, maternal depression, total stress, and parent-child interaction measures of commands and compliance were not significantly related to treatment completion.

Classification Tree Development—Since SES had the highest ESS and was statistically significant and stable in LOO, it was entered as the first level in the classification tree. Each potential predictor was then evaluated for the low SES and high SES branches of the tree to see if it improved predictive power. For the high SES branch, none of the remaining clinical or demographic predictors significantly improved predictive ability. For the low SES branch, only race/ethnicity was both significant ($ESS = 52.73\%$, $p = .027$) and stable in LOO ($p = .023$), and was entered as the second branch. Sample sizes were too small to allow

analyses at the next branch. Pruning procedures indicated that the SES and race/ethnicity branches be retained.

Figure 1 illustrates the classification tree for treatment completion. Being from a higher social class family, regardless of race/ethnicity, correctly predicted treatment completion 83.6% of the time. Being from a lower SES, minority group family correctly predicted noncompletion of treatment 72.7% of the time. In contrast, being from a low-SES White family successfully predicted treatment completion 80% of the time. Although the samples in the second branch were small, the results were stable in LOO.

BARRIERS AS PREDICTORS OF ATTENDANCE

The total barriers score was not correlated with the number of sessions completed ($r = -.16$, $p = ns$). The total barriers score was not significantly correlated with process satisfaction ($r = -.31$, ns) or outcomes satisfaction ($r = -.19$, ns).

Although minority status was a strong predictor of attendance, it was not clear what factors associated with race might affect attendance. Matching therapists and participants on the basis of race was not possible in the present study, but the absence of matching might affect the treatment alliance and interfere with attendance. Because the BTPS includes a relationship barrier scale, however, it was possible to determine whether race/ethnicity was associated with the mother's perception of her relationship with the trainer. There was no difference between race/ethnic groups on the perceived quality of their relationship to the therapists, $t(62) = 0.79$, $p = .44$.

CONSUMER SATISFACTION AS A PREDICTOR OF ATTENDANCE

Completing seven or more sessions of treatment was not significantly related to posttreatment process, $r(58) = .02$ (ns), or outcome satisfaction, $r(58) = -.20$ (ns).

Discussion

It is difficult to compare completion rates across studies of behavioral parent training. Studies differ widely in establishing the criteria for treatment completion, and many studies do not report completion rates (Brestan & Eyberg, 1998). Some efficacy-oriented studies may increase completion rates by taking steps, such as providing transportation, that are uncommon in practice, whereas other, effectiveness-oriented studies, such as the present one, do not do so. Viewed in that context, the 77.9% complete rate for the present study is similar to those in many other studies of behavioral parent training with young children, which ranged from 49% to 100% ($M = 75\%$; Dumas et al., 2006; Gross et al., 2003; Schuhmann, Foote, Eyberg, Boggs, & Algina, 1998; Turner & Sanders, 2006; Webster-Stratton & Hammond, 1997; Webster-Stratton, Hollinsworth, & Kolpacoff, 1989; Werba et al., 2006).

Prior studies (Kazdin et al., 1993; Reyno & McGrath, 2006) have found that families of children with conduct-related behavior problems who do not complete treatment programs are more likely to be minority group members, from lower SES backgrounds, come from single parent families, and have higher levels of pretreatment behavior problems. Studies of children with anxiety-related problems have not found consistent pretreatment predictors of treatment completion. Researchers (Pina et al., 2003) have called for further examination of the predictors of attrition for conduct-related problems to examine how robust the relationships are in different settings. Identifying pretreatment predictors of attrition could help with treatment planning for families likely not to complete treatment (Brestan et al., 1999). Given the limited range of social and clinical factors that have been able to predict outcome, however, it is also important to examine factors that develop during treatment that

might interfere with treatment outcome, including barriers to treatment (Kazdin et al., 1997; Pina et al.).

The present study examined pretreatment sociodemographic and clinical predictors of treatment completion, barriers to treatment, and consumer satisfaction with behavioral parent training of young children with ODD in which the children were identified and treated in pediatric primary care settings. Few studies have examined factors associated with treatment completion for behavioral parent training of young children. The one study we have located found no significant pretreatment sociodemographic predictors of treatment. One clinical predictor (maternal direct command ratio) was significant (Werba et al., 2006), but may not have been significant if corrections for multiple comparisons had been done. Prior studies also reported statistical significance of variables investigated but did not quantify the strength of their predictive power. Through the use of ODA and the development of a classification tree, the present study was able to quantify the predictive ability of a combination of statistically significant pretreatment family characteristics.

SES, race/ethnicity, mother's education, and father's education were all significant, stable, and moderately strong predictors of treatment completion before correcting for multiple comparisons, but only SES and race/ethnicity remained significant after such corrections were made. Being from a lower SES or a minority group family was associated with not completing treatment. Other demographic and clinical predictors were not significant, including marital status, CBCL total score, Eyberg intensity score, maternal depression, and total life stress.

Further analyses showed that no other clinical or demographic factors improved prediction in the high SES branch of the classification tree. In the low SES branch, however, race/ethnicity was both a statistically significant and stable predictor of treatment completion. Overall, being from a high-SES family correctly predicted treatment completion 83.6% of the time. Being from a low-SES, minority-group family correctly predicted noncompletion of treatment 72.7% of the time, but being from a low-SES, White family predicted treatment completion 80% of the time. The small sample sizes for the analyses with two branches in the classification tree suggest that some caution is needed in interpreting the results. The LOO procedure for assessing stability should be most sensitive to instability when sample sizes are small, however. Since the results were stable in LOO in spite of the small sample sizes, confidence in these findings increases.

The results are both similar to and different from those reported previously. Prior studies (Copage et al., 2001; Kazdin et al., 1993; Kazdin, Mazurick, & Siegel, 1994; Kazdin & Wassell, 1998; McMahon et al., 1981) as well as the present study found that psychosocial factors associated with low SES, levels, and minority group membership, and, in some cases, lower parental educational levels, were associated with noncompletion. While Kazdin et al. (1993) found that being from a single-parent family was associated with higher rates of noncompletion, this study found no relationship between marital status and treatment completion. In addition, although Kazdin et al. (1993) found that parental stress was associated with noncompletion, that finding was not replicated in the present study. Neither study found that maternal depression was related to treatment completion. Overall, even though the Kazdin et al. (1993) study was conducted primarily with school-age children in a mental health treatment setting, and the present study was conducted with younger children in primary care, the predictors are quite similar. The relationship between treatment barriers and attendance differed across studies. Whereas Kazdin et al. (1997) found that treatment barriers predicted attendance, there was no relationship between barriers score and attendance in the present study. Conducting the study in primary care settings may have reduced some of the barriers and weakened the relationship between barriers and attendance.

Total barriers to treatment, process satisfaction, and outcome satisfaction were not significantly associated with treatment completion. Process satisfaction and total barriers, however, were negatively and significantly correlated with one another. Because this is a correlational finding, the direction of influence is unclear. People who encounter more barriers to treatment may also be less likely to find certain aspects of the study to be acceptable, but it is also possible that people who find aspects of the program unsatisfactory make less effort to overcome treatment barriers.

These study results indicate that social class and race/ethnicity are reasonably strong predictors of attending enough sessions of parent training to improve behavior compared to those obtained with a minimally intensive treatment. Since barriers to treatment, including such factors as stressors, obstacles to treatment, and treatment demands, were unrelated to attendance in the present study, other factors related to social class and minority status that could contribute to better consumer satisfaction and treatment attendance must be addressed.

First, it may be important to address intrinsic aspects of the intervention itself that conceivably make behavioral parent training sessions less desirable to attend for lower SES and minority parents. In a recent review of the effects of childhood poverty, Evans (2004) noted that poverty involves its own special environment with multiple stressors and risk factors. Included in that environment are certain parenting practices that are not congruent with those taught in parenting programs (Evans, 2004; McLoyd, 1998). Numerous studies show that low-income parents are less responsive to their children and more likely to engage in harsher, more punitive parenting practices (Conger et al., 1992; Conger, Ge, Elder, Lorenz, & Simons, 1994; Dodge, Pettit, & Bates, 1994; Emery & Laumann-Billings, 1998; Grant et al., 2003; Lempers, Clark-Lempers, & Simons, 1989; McLoyd, Jayaratne, Ceballo, & Borquez, 1994). Lower-income parents speak less often and in less complex ways to their young children. Parenting programs tend to emphasize the use of parental verbal skills for attending, praising, and directing children, and replacing harsh punishment with milder consequences (time-out, redirecting, loss of privileges with emphasis on immediate rather than prolonged consequences) that are difficult to carry out. Furthermore, most parenting programs spend several sessions addressing the use of directed play and positive praise before providing help with discipline techniques. A gap may arise between the parent's current techniques and those advocated by the parent training program that may be difficult for some lower SES or minority parents to bridge, or low-SES minority parents may feel a greater need to address discipline issues first. Unless steps are taken to adapt the training programs to these parents, regular attendance, greater consumer satisfaction, and the better outcome resulting from better attendance may be difficult to achieve. Greater attention is now being paid to adapting treatment to more diverse child patient groups (Bernal, 2006; Bernal & Saez-Santiago, 2006; Sharp, 1991), and the present study suggests that parent training programs may benefit from similar efforts.

It is also possible that poorer attendance among minority members was not due to factors intrinsic to the treatment program, but to the absence of therapist-patient racial matching. In the adult treatment literature, poorer treatment attendance has been noted for low-income minority group members (Agosti, Nunes, & Ocepeck-Welikson, 1996), and African Americans prefer to see African American than White therapists (Atkinson, 1983; Helms & Carter, 1991; Thompson, Bazile, & Akbar, 2004; Wintersteen, Mensinger, & Diamond, 2005). Although therapist-patient matching improved treatment completion in a study of substance abusing adolescents (Wintersteen et al., 2005), there remain few studies on the effects of racial/ethnic matching with adolescents (Wintersteen et al.), with parents and children when the child is the patient, or in parent training. In addition, with the exception of a study of multisystemic therapy showing that racial and ethnic matching increased time in treatment and produced greater symptom reduction (Halliday-Boykins, Schoenwald, &

Letourneau, 2005), few studies of therapist-patient racial matching with children and adolescents used empirically based treatments. Because attendance was poorer for minority families in the present study, further research is needed to determine if therapist matching improves consumer satisfaction and attendance at parent training sessions in both primary care and mental health service sectors. Of course, even if effective in improving attendance, patient/therapist matching may not always be possible, placing increased emphasis on the importance of ensuring that the content of structured interventions is acceptable to minority groups.

Limitations of this study include the inability to examine therapist-client racial matching directly. Mental health services for this study were delivered in the primary care service sector. Results could differ if parent training programs were examined in different settings. "Exit interviews" with families who either completed or dropped out of treatment using qualitative data collection procedures were not conducted. Such interviews may be useful for understanding the acceptability of the interventions utilized and shed light on issues regarding patient-therapist racial/ethnic matching in future studies.

Given the high prevalence and relative stability of ODD in community samples, the long-term impact of the disorder, including the tendency for ODD to develop into conduct disorder for some children, and its increasing resistance to treatment, early intervention for ODD is important. As discussed earlier, there are indications that minimal interventions for ODD may be important and have the potential for being available to large numbers of families. It can be anticipated, however, that not all children with ODD will respond to MITs and may need to "step up" to more intensive interventions. At that point, regular attendance at treatment will be important to maximize treatment benefits. The present study suggests that regular attendance is less likely for lower SES, minority families and that poorer attendance cannot simply be explained by barriers to treatment. Future studies may need to address the content of parenting programs to personalize them for individuals from lower SES and minority groups to maximize their effectiveness and may need to examine how racial/ethnic differences in trainers may influence attendance and outcomes. The process of personalizing such treatment is highly consistent with the new strategic plan of the National Institute of Mental Health (2008). Finding ways to identify and treat young children in primary care may be particularly important because pediatricians are often the first professionals parents have a relationship with and only about 20% of the children with ODD in primary care settings are referred to tertiary-care mental health centers for treatment (Lavigne, Arend, Rosenbaum, Binns, Christoffel, & Smith, 1998; Pavuluri, Luk, & McGee, 1996).

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Figure 1.

Classification tree for discriminating those patients completing 7 or more sessions of parent training. Ellipses are nodes, arrows show branches, and squares illustrate prediction end point. Numbers within the squares illustrate the number of correct predictions divided by the total number of observations classified at that end.

Table 1

Means (and standard deviations) for intervention study treatment groups and minimal dose effect groups

	Nurse-led Group	Psychologist-led Group	MIT
CBCL externalizing scale			
Pretreatment	69.53	70.16	73.23
Post-treatment	63.27	60.57	65.52
1-year	60.47	58.16	60.42
Eyberg Intensity Scale			
Pretreatment	151.42	155.97	160.00
Post-treatment	131.52	132.16	141.90
1-year	125.44	123.16	128.97
Minimal dose effect analysis	Less than 7 Sessions	7–12 sessions	
CBCL externalizing scale			
Baseline	70.05 (7.09)	69.73 (4.88)	
Post	67.47 (9.18)	60.60 (9.45)	
Follow-up	62.05 (10.7)	58.75 (8.39)	
CBCL total			
Baseline	68.79 (7.66)	67.97 (7.00)	
Post	58.8 (9.26)	57.18 (9.38)	
Follow-up	57.0 (10.95)	56.25 (8.92)	
Eyberg Intensity Scale			
Baseline	164.47 (39.81)	151.11 (22.77)	
Post	152.88 (46.73)	125.97 (38.21)	
Follow-up	146.41 (41.82)	121.24 (27.5)	

Note. MIT=Minimal intervention treatment. Treatment groups did not differ at baseline.

Table 2

Significant pretreatment predictors of treatment completion

Variable	ESS	<i>p</i> -value		Direction (if significant and stable)
		Prediction	LOO	
SES	36.2%	.0035	.002	Social class 3 or lower predicts noncompletion
Maternal Education	30.3%	.032	.024	Less than college degree predicts Noncompletion
Paternal Education	28.9%	.049	.01	Less than some college predicts Noncompletion
Race/ethnicity	33.2%	.007	.006	Minority status predicts noncompletion

Note. ESS = Effect Strength for Sensitivity; LOO = Leave-one-out analysis.