

Predictors of Treatment Outcome in Parent Training For Families with Conduct Problem Children

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A total of 101 mothers and 70 fathers with conduct problem children completed a 10-week parent-training program. Treatment effectiveness was assessed at 1 month and 1 year posttreatment based on three types of outcome variables: home observations of parent and child behaviors, parent reports of their children's behavior and teacher reports of the children's adjustment. Multiple regression analyses were performed using four predictors: parent depression, marital status or marital adjustment, socioeconomic status, and amount of negative life experiences. Results indicated that depression and the amount of negative life stress made a significant contribution to the prediction of mother and father reports of child adjustment regardless of the time of the posttreatment assessment. The combination of socioeconomic status and marital status (single *versus* married) made a significant contribution to mothers' behaviors with their children at both posttreatment assessments. For fathers, marital adjustment made the greatest contribution to the prediction of their critical behaviors with their children immediately at posttreatment but by 1-year follow-up, socioeconomic status emerged as a more significant predictor. For children, the best predictor of the amount of observed child deviance on the home observations was single-parent status or marital adjustment. For families who had a father present, the amount of negative life stress experienced by the family in the year since treatment was completed, was the best predictor of child deviance.

Recently, investigators (Dumas, 1986; Griest, Forehand, & Wells, 1981; Griest & Wells, 1983; Patterson, 1986; Wahler & Dumas, 1984) have begun to examine the variables influencing why parent training programs are successful for some families with conduct problem children and not for other such families. There are suggestions in the literature that the parent's ability to cope with a conduct problem child and to benefit from parent training may be influenced by factors such as the parents' psychological or personal adjustment, interparental factors, and extrafamilial factors such as social class and life stress (Dumas & Wahler, 1983; Griest & Wells, 1983; Webster-Stratton,

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1985a). Several investigations have revealed that pretreatment levels of mother depression (Beck Depression Inventory) were significantly related to treatment failure or relapses during follow-up evaluations (Forehand, Furey, & McMahon, 1984; McMahon, Forehand, Griest, & Wells, 1981). Other studies examining the relationship between marital status and treatment outcome have found treatment failure related to marital problems (Reisinger, Frangia, & Hoffman, 1976; Webster-Stratton, 1985a). Strain, Young, and Horowitz (1981) found that single-parent families were not only more likely to drop out of parent training than intact families, but that intact families were more successful in maintaining treatment effects over time than single-parent families.

Still other studies (McMahon et al., 1981; Reid & Patterson, 1976) have reported that those families most likely to drop out of treatment were characterized by low socioeconomic status. Wahler (1980), Wahler and Afton (1980) and Webster-Stratton (1985a) confirmed these findings by reporting that the most "socioeconomically disadvantaged" families did not respond well or relapsed following parent-training programs. Socioeconomic disadvantage was defined by these authors to include such factors as low income and low education, as well as single-parent status, and referral to the clinic by an outside agency. Furthermore, Dumas and Wahler (1983) described a model whereby socioeconomic disadvantage coupled with insularity or social isolation resulted in a steady increase in the probability of parent training treatment failure. Finally, Webster-Stratton (1985a) reported that in addition to socioeconomic disadvantage the degree of negative life crisis and environmental stresses (for example, moving to a new neighborhood, death in family, unemployment) following parent training was significantly related to a family's ability to maintain treatment effect at 1-year followup assessments.

There appears to be consensus by a number of investigators that the family's ability to benefit from parent training may be influenced by factors such as maternal depression, marital discord or single-parent status, negative life stressors, and socioeconomic status (Dumas & Wahler, 1983; Griest & Wells, 1983; Webster-Stratton, 1985a). One limitation of many of the prior studies, however, was that they either looked at only one isolated predictor variable at a time or they combined predictors in an Index score making it difficult to determine the effects of the individual components of the index (e. g., marital status was combined with socioeconomic factors). It remains unclear how several predictors would function in concert rather than in isolation or what the extent of amplification might be among these predictors. It is unclear as to whether some predictors are more powerful than others. Therefore, the purpose of this study was to look at the effects of four different predictor variables both independently and in combination with each other on treatment outcome. Increased knowledge in this area could have some practical implications for intervention, as some of these predictors are likely to be more amenable to change than others.

The second confounding issue in this research is the lack of a standard method to assess the treatment success or the "clinical significance" of parent training outcome. Some studies have defined treatment success as the family's ability to complete all the treatment sessions or success is based on therapists'

reports of families' improvements (Dumas, 1986). Other studies have used criteria such as normative cutoff points on well-established parent report measures as the basis to establish treatment "responders" or "non-responders" (Kazdin, 1985; Webster-Stratton, 1985a). Still other studies have used 30 to 50% reduction in observed child deviance or observed parent criticisms and commands as behavioral indicators of treatment success (Dumas & Wahler, 1983; Patterson, 1974; Webster-Stratton, 1985a). It is likely that different predictor variables would differentially effect different types of outcome variables. For example, Forehand and Brody (1985) reported that marital satisfaction was related to child and parent behaviors, whereas depression was related to parental perceptions of the child. Consequently, this study uses direct home observation and parent and teacher reports of children's adjustment as measures of treatment outcome in order to determine if different predictors differentially affect different outcome measures.

A third limitation of the existing research concerning important treatment outcome for families with conduct problem children, is that they have almost exclusively relied on predictors related to mothers' psychological status or mothers' perceptions of marital support or negative life events. Likewise, outcome has largely been assessed in terms of mothers' reports of their children's behavioral problems or mother-child behavioral interactions. This study addresses this limitation of prior research by obtaining predictors related to both mothers' and fathers' psychological status and perceptions of life stress as well as father reports and behavioral interactions with their children. Since many more fathers are becoming involved in parent training programs, it is equally important to understand the critical predictors related to fathers' success or failure to respond to parent training treatment programs.

The purpose of this study was to use multiple predictor measures at one time with a large sample of families with young conduct problem children and to determine how they related to one another or acted in combination to predict treatment response immediately posttreatment and at 1-year post-treatment. Treatment outcome was defined by both mother and father and teacher reports as well as by father and mother and child behavioral interactions.

METHOD

Subjects

Subjects were recruited from a Parenting Clinic at a large university which for the past 10 years has had specialized programs for the treatment and evaluation of families with conduct problem children. Criteria for study entry were the following: (a) the child was between 3 and 8 years old; (b) the child had no debilitating physical impairment, intellectual deficit, or history of psychosis; (c) the child was not receiving treatment; (d) the primary referral problem was child conduct problems which had been occurring for more than 6 months (e.g., noncompliance, social aggression, and oppositional behaviors); (e) parents rated their children as having a clinically significant number of behavior problems according to the Eyberg Child Behavior Inventory (ECBI) (Eyberg & Ross, 1978).

The 114 multiproblem families originally entered into the study were either self-referred (43%) or professionally-referred (57%). Study children included 79 boys and 35 girls, with the mean age of 4 years, 6 months when they started treatment. The mean number of pretreatment behavior problems according to the ECBI was 21.3 (SD 6.2), indicating that the children were clearly in the clinic range according to Eyberg and Ross (1978) (nonclinic mean 6.8 ± 3.9). Study parents included 114 families. Of these 79 (69.3%) were married and 35 (30.7%) single parents. Yearly income ranged from welfare ($n = 21$) to less than 28,999 ($n = 31$) to above 29,000 ($n = 62$).

MEASURES

Extrafamilial Measures

Socioeconomic (SES). Family social class was determined by Hollingshead and Relich's (1958) Two Factor Index based on occupation and education. The index yielded a wide range of social class for the sample: Class V ($n = 17$), Class IV ($n = 26$), Class III ($n = 33$), Class II ($n = 24$) and Class I ($n = 14$). The continuously scaled social position score was used in the present analyses.

Life Experience Survey (LES). (Sarason, Johnson, & Seigel, 1978). The LES is a 57-item measure that permits the respondent to assess positive and negative life experiences over the previous year (e.g., unemployment, death in family, pregnancy, move, divorce, etc.). It was normed on 345 university students and found to have 5-6 week test-retest reliabilities of .56 to .88. In addition, the scale has been shown to be related to measures such as anxiety, achievement, maladjustment and depression. The negative life experience score (NLES) was used in the study because it was shown to be more reliable and because the authors reported it to be a better measure of life stress.

Interparental Measures

Marital Status (MARSTAT). A family was considered to be a two-parent household (intact) if the mother was married or living with her husband or cohabiting for two years. A family was considered single or a one-parent household if the mother had never been married, was separated or divorced, or had been living away from her husband for at least two years.

Marital Adjustment Test (MAT). The MAT (Locke & Wallace, 1959) is a self-report measuring the quality of marital satisfaction. It consists of 32 items and has been found to be stable across time and to discriminate reliably between distressed and non-distressed couples.

Parental Psychological Measures

Beck Depression Inventory (BDI). The BDI (Beck, 1972) consists of 21 items, each rated on a 0- to 3-point scale. It has been shown to correlate significantly with clinicians' ratings of depression (Metcalf & Goldman, 1965) and with objective behavioral measures of depression (Williams, Barlow, & Agrad, 1972). Split-half reliability achieved a Spearman-Brown reliability coefficient of .93.

Parent Perceptions of Child Behaviors

Child Behavior Checklist (CBCL). (Achenbach & Edelbrock, 1983), consists of 118 items each rated on a 0-to-2 point scale. The items constitute multiple behavior problem scales derived separately for boys and girls in different age groups (e.g., 4-5, 6-11 years). In this study, the Total Behavior Problem summary score was of primary interest because of its applicability to a variety of child conduct problems.

Eyberg Child Behavior Inventory (ECBI). The ECBI (Robinson, Eyberg, & Ross, 1980) is a 36-item behavioral inventory of conduct problems for children aged 2-16 years. Previous ECBI research with normative samples of 512 children has demonstrated reliability coefficients from .86 (test-retest) to .98 (internal consistency), indicating that the inventory is stable and homogeneous. There are two scores: A Total Problem score permits the parent to indicate (yes/no) whether this behavior is a problem for her or him, and an Intensity score permits the parent to rate on a scale of 1-7 the frequency of the behavior problem.

Teacher Perceptions Of Child Behaviors

Behar Preschool Questionnaire (PBQ). The PBQ was completed at immediate posttreatment and at 1-year followups. The PBQ includes 30 items, each rated on a 0-2 point scale, and is designed to be filled out by preschool teachers of children 3-7 years of age. Factor analysis yielded three sub-scales in addition to a Total Behavior Problem Score: Hostile-Aggressive, Anxious-Fearful, and Hyperactive-Distractible. The author reported that test-retest reliabilities ranged from .60 to .99 and that an interrater reliability of .84 was derived from the overall scale and of .81, .71, and .67 was derived for the factors. The PBQ also reported to discriminate normal from disturbed populations (Behar, 1977).

Home Observation Measures

The Dyadic Parent-Child Interaction Coding System (DPICS) (Robinson & Eyberg, 1981), consisting of 29 behavior categories, was used to observe parent-child interactions in the home. From the behavior categories, one summary variable was formed for parent behaviors: critical statements + physical negative behaviors. For the target child there was one variable: Total Child Deviance (sum of the frequency of whine + cry + physical negative + smart talk + yell + destructive + noncompliance). These specific behaviors were selected from the DPICS coding system in order to focus on parent and child behaviors which have been shown to discriminate clinic and nonclinic mothers and children (Forehand, King, Reid, & Yoder, 1975; Patterson & Cobb, 1973; Webster-Stratton, 1985b).

The home observations were obtained by making two home visits at each assessment period in which each parent-child dyad was observed for 30 min at each of the six visits. All observations took place in late afternoon between 4:30-7:30 p.m. with all family members present. Home observations were made by extensively trained observers who were blind to the hypotheses of the study. They initially received extensive training and had to maintain 80% reliability

with practice tapes before conducting home observations. To maintain accuracy, observers had weekly training sessions and practiced on videotaped interactions. To assess reliability, a second observer was present for at least 30% of all home observations. Reliability was calculated in two ways: The ratio of percent of occurrence agreements to total number of occurrence agreements plus occurrence disagreements and Pearson product-moment correlations between rating for each separate behavior dimension. The percent agreement reliability was calculated for each 5-minute segment. Mean overall interrater reliability was 80% (range 70–92%). For the two mother behavior categories, physical negative and critical statements, the product-moment correlations calculated between observers were .90 and .78 respectively; and for the child behavior dimension the correlation was .85.

PROCEDURE

Prior to the onset of parent training, and immediately posttreatment, data were collected for each family in regard to socioeconomic variables, marital status, parental perceptions of their children's behavior, psychological variables and home observations of parent-child interactions. Families received a parent therapy program which consisted of a series of 10 2-hour training sessions. The first 5 weeks of the treatment program included a modification of the interactional model (Hanf & Kling, 1973) focusing on play skills, praise and tangible rewards. The last half of the program focused on teaching parents non-punitive discipline approaches (Forehand & McMahon, 1981; Patterson, 1974) and problem solving approaches.¹ Mothers attended an average of 9.3 treatment sessions and 18.6 hours of therapy and fathers an average of 8.2 treatment sessions and 16.4 hours. Thirteen mothers and nine fathers dropped out of treatment after one or two treatment sessions, and the remaining 101 mothers and 70 fathers completed greater than 50% of treatment sessions as well as the immediate posttreatment assessments. Treatment outcome was assessed at 1 month and 1 year posttreatment and both followup assessments included two home visit observations and all the parent report measures. In addition, the Life Experience Survey was completed at the 1-year followup assessment. Ninety-four mothers and 60 fathers completed some if not all aspects of the 1-year followup assessment, i.e., only 7 mothers (7%) and 10 fathers (14.5%) who originally completed treatment failed to complete any of the 1-year followup assessments.

TREATMENT OUTCOME

Families were assessed in terms of treatment outcome on the basis of three different outcome criteria: (a) parent (CBCL) and teacher (Behar) perceptions

¹A more complete description of the training program and requests for reprints are available from Carolyn Webster-Stratton, School of Nursing, University of Washington, SC-74, Seattle, WA 98195.

of child adjustment; (b) number of parent physically negative and critical behaviors when interacting with their children; (C) amount of child deviant behaviors.

RESULTS

Initial analyses to describe changes over time in the dependent measures consisted of repeated-measures MANOVA and then the following preplanned comparisons: (a) Pretreatment *versus* Immediate Posttreatment, (b) Pretreatment *versus* 1-Year Followup, and (c) Immediate Posttreatment *versus* 1-Year Followup. Paired t-tests were performed to describe changes over these time periods. For each dependent variable the Dunn-Bonferroni tables were used to determine the critical values in order to correct for the number of individual comparisons. Only values of $p < .01$ were considered significant. Table 1 presents the mean scores and standard deviations at baseline, immediate posttreatment and 1-year followup for each of the dependent variables. Means are presented only for subjects who had every measure completed at all three assessment periods.

Both mothers and fathers reported significantly fewer child behavior problems on the CBCL immediately posttreatment, $t(90) = 12.79, p < .001$ and $t(54) = 9.71, p < .001$. These significant changes in both parents' perceptions were maintained one year later, $t(90) = 11.54, p < .001$ and $t(54) = 10.47, p < .001$. Home observations immediately posttreatment revealed a significant reduction in mothers' and fathers' total critical and physically negative behaviors when interacting with their children, $t(86) = 5.12, p < .001$ and $t(58) = 4.81, p < .001$. These significant mother and father behavior improvements were also observed on the home observations one year later, $t(86) = 4.88, p < .001$ and $t(58) = 6.48, p < .001$. There was a significant reduction in total child deviant behaviors when interacting with their mothers and with their fathers, $t(86) = 3.52, p < .001$ and $t(58) = 3.29, p < .002$. These significant child behavior improvements were also observed on home visits one year later, $t(86) = 3.82, p < .001$ and $t(58) = 7.01, p < .001$. Teachers reported significantly fewer disturbed behaviors at immediate posttreatment than at pretreatment, $t(69) = 4.09, p < .001$.

Prediction of Treatment Outcome

The primary purpose of this study was to determine which predictor variables were related to treatment outcome as well as to understand how the predictor variables would act in combination. For mothers, the four predictor variables assessed were as follows:

- (a) Mother Depression (BDI);
- (b) Socioeconomic Status (SES) comprised of education and occupation;
- (c) Negative Life Experiences (NLES) - number of negative life experiences which occurred during the previous year;
- (d) Marital status (MARSTAT) - single *versus* married.

Since the predictors for both the married and single mothers were of interest the marital satisfaction measure was not used for mothers. Approximately

TABLE 1
COMPARISON OF MOTHER PERCEPTIONS AND MOTHER-CHILD INTERACTIONS AT BASELINE, IMMEDIATELY POSTTREATMENT AND ONE YEAR LATER

Variables	Pretreatment		Immediate posttreatment		1-Year followup	
	M	SD	M	SD	M	SD
<u>Parent Perceptions</u>						
<u>Mother</u>						
CBCL Total Behavior Problem Score ^a	66.28	(8.91)	55.29	(11.13) ⁺⁺⁺	55.06	(11.37)**
<u>Father</u>						
CBCL Total Behavior Problem Score ^a	65.61	(6.81)	56.69	(9.61) ⁺⁺⁺	53.04	(10.47)*** ^{oo}
<u>Parent-Child Behaviors^b</u>						
Mother Critical + Physical Negative	15.68	(11.5)	9.93	(8.0) ⁺⁺⁺	10.63	(9.1)***
Father Critical + Physical Negative	16.77	(13.4)	8.57	(6.5) ⁺⁺⁺	7.13	(7.1)***
<u>Child Behavior</u>						
Total Child Deviance with Mother ^c	35.76	(22.5)	26.40	(18.0) ⁺⁺	26.90	(18.1)***
Total Child Deviance with Father ^c	37.76	(23.6)	25.86	(19.7) ⁺⁺	18.38	(12.6)*** ^{oo}
<u>Teacher Perceptions</u>						
PBQ Total Disturbed Behavior	16.33	(10.09)	12.57	(9.22) ⁺⁺⁺	14.32	(10.95)

Note. The sample size reflects the number of subjects who had data complete at all three time points. N = 90 mothers and 54 fathers for CBCL and 86 mothers and 58 fathers for parent-child behaviors and 69 for teachers.

^a CBCL = Child Behavior Checklist (T scores).

^b Based on 30 minutes of observation per parent-child dyad.

^c Includes noncompliance.

^{oo} $p < .01$ Comparison of immediate posttreatment with 1-year followup.

⁺⁺ $p < .01$

⁺⁺⁺ $p < .001$ Comparison of immediate posttreatment with pretreatment scores.

^{***} $p < .01$

^{***} $p < .001$ Comparison of 1-year followup with pretreatment scores.

22% of the mother group did not have marital partners. For fathers, the four predictive variables assessed were as follows:

- (a) Father Depression (BDI);
- (b) Socioeconomic status (SES) - education and occupation;
- (c) Negative Life Experiences (NLES);
- (d) Marital Satisfaction (MAT) - Since none of the fathers were single, the marital satisfaction score was used as the predictor instead of the single-versus-married score which was used for the mothers.

For the immediate posttreatment outcome variables, all four predictors were derived from the pretreatment assessment. For the 1-year followup outcome variables, the BDI and MAT predictors were derived from the immediate post-treatment assessment. The rationale for this was that some parents' depression and marital satisfaction scores improved during the course of the treatment, so it was felt that the more relevant predictor of long-term outcome would be the status of their scores posttreatment. Finally, the NLES predictor was completed at the 1-year followup because it asked parents to identify new negative life events which had occurred during the year since treatment was completed.

A forward (stepwise) inclusion procedure was used, the order of inclusion determined by the respective contribution of each variable to explained variance. All four predictors were allowed to enter regardless of their statistical significance (F to enter) at any given step. The inclusion of all four predictors allowed for the examination of the relative contribution of each of the four predictors when in *combination*, as indicated in Tables 3-6 by the standardized betas, multiple R 's and F values given at the final step. The forward stepwise inclusion method allowed for the examination of the optimal predictive value

TABLE 2
CORRELATIONS AMONG PREDICTORS

	Pretreatment			Posttreatment		
	SES	BDI	NLES	SES	BDI	NLES
Mother predictors						
Marital status (MARSTAT)	-.28**	-.37***	-.27***	-.32***	-.27***	-.17
Socioeconomic status (SES)		.42***	.13		.35***	.30**
Depression (BDI)			.38***			.36***
Father predictors						
Marital satisfaction (MAT)	-.10	-.31**	-.41***	-.10	-.44***	-.43**
Socioeconomic status (SES)		.12	.15		-.13	.02
Depression (BDI)			.29*			.56***

Note. Marital status: 1 = married 0 = single; Socioeconomic status: higher values indicate lower status; NLES is number of negative life events.

* $p < .05$

** $p < .01$

*** $p < .001$

of each predictor, as indicated in Tables 3-6 by the significance of the R^2 change (the significance of the F to enter at any given step). A hierarchical approach was not used because a priori ordering of predictors could not be theoretically justified. These analytic procedures are functionally the same as simple regression analyses, and, therefore, may result in redundant analyses, which may result in an occasional capitalization on chance findings. Table 2 presents the correlations among predictors. Tables 3 and 4 present the regression analysis separately for each of the outcome criteria at the immediate and 1-year post-treatment assessments for mothers and Tables 5 and 6 give these same analyses for fathers.

For the mother report outcome criterion at the immediate posttreatment assessment, the multiple regression based on four predictors was significant, $F(4, 97) = 3.32, p < .01$. Simple correlations for three of the predictors were significant but in combination none reached significance at the .05 level. It is of interest to note that relative to the other predictors depression had the highest beta weight ($p = .07$) and made the greatest contribution to mothers' perceptions of their children's behaviors. Increased maternal depression was related to increased mother reports of child behavior problems. At 1-year followup, again the multiple regression based on the four predictors was significant $F(4, 85) = 2.93, p < .02$. In combination, none of the predictors were significant; however, the number of negative life experiences had the greatest beta weight ($p = .07$) and contributed the most to the mother's perceptions of her child. Mothers with more negative life events in the year following treatment reported more negative perceptions concerning their children's behaviors.

For the mother behavior outcome criteria at the immediate posttreatment assessment, the multiple regression based on the four predictors was significant $F(4, 97) = 5.77, p < .001$. While three of the simple correlations were again significant, the significant beta weights showed that in combination socioeconomic status and marital status made the greatest contribution to the prediction of mother's critical and physically negative behaviors. At 1-year followup, the multiple regression was significant, $F(4, 76) = 5.66, p < .0001$. Again, the significant beta weights indicated that in combination socioeconomic status and marital status made the greatest contribution. Low socioeconomic status and single-mother status predicted increased maternal criticisms and physically negative behaviors with their children. It is noteworthy that maternal depression did not have a significant beta weight when combined with the other variables.

For the child behavior with mother outcome criterion at the immediate post-treatment assessment, the multiple regression was significant, $F(4, 97) = 4.06, p < .004$. Three of the simple correlations were significant, but the beta weights showed that in combination, marital status made the greatest contribution to the child's behavior. At 1-year followup, the multiple regression was significant, $F(4, 76) = 7.36, p < .001$. Again, marital status made the greatest contribution to the child's behavioral outcome, that is, single-parent status was the best predictor of children with more deviant behaviors.

For the father report outcome criterion at the immediate posttreatment assessment, the multiple regression based on four predictors was significant, F

TABLE 3
STEPWISE MULTIPLE REGRESSION ANALYSES AT IMMEDIATE POSTTREATMENT FOR MOTHERS

Criterion outcome	Predictors	R ² Change	Simple correlation	Standardized Beta ^a	Multiple R	F	Significance
Mother perception	1. BDI	.10***	.31***	.21	.35	3.32	.014
	2. NLES	.01	.22*	.12			
	3. SES	.01	.22*	.11			
	4. MARSTAT	.001	-.16	-.01			
Mother behavior	1. SES	.13***	.36***	.28**	.44	5.77	.001
	2. MARSTAT	.04*	-.30**	-.23*			
	3. NLES	.01	-.02	-.15			
	4. BDI	.001	.23*	.08			
Child behavior with mother	1. MARSTAT	.10***	-.31***	-.26*	.38	4.06	.004
	2. SES	.03	.26**	.15			
	3. NLES	.01	.02	-.11			
	4. BDI	.01	.23*	.11			
Teacher perception	1. MARSTAT	.01	-.11	-.17	.21	.99	.42
	2. BDI	.02	-.07	-.21			
	3. SES	.01	.08	.12			
	4. NLES	.001	.02	.03			

Note. SES—a high score indicates a low social class according to Hollingshead and Reich's (1958) Two-Factor Index. MARSTAT—0 for single and 1 for married. BDI—Beck Depression Inventory. NLES—Negative Life Events Scale.
a Standardized betas at last step with all four predictors entered.

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 4
STEPWISE MULTIPLE REGRESSION ANALYSES AT 1 YEAR POSTTREATMENT FOR MOTHERS

Criterion outcome	Predictors	R ² Change	Simple correlation	Standardized Beta ^a	Multiple R	F	Significance
Mother perception	1. NLES	.07**	.27**	.20*	.35	2.93	.02
	2. BDI	.03	.26**	.16			
	3. MARSTAT	.02	-.21*	-.15			
	4. SES	.001	.12	-.05			
Mother behavior	1. SES	.15***	.39***	.29**	.48	5.60	.0001
	2. MARSTAT	.07**	-.38***	-.29**			
	3. NLES	.002	.20	.06			
	4. BDI	.0001	.20	-.009			
Child behavior	1. MARSTAT	.21***	-.46***	-.36*	.53	7.36	.0001
	2. BDI	.06	.36***	.21			
	3. SES	.01	.30**	.11			
	4. NLES	.000	.20	.03			
Teacher perception	1. MARSTAT	.08**	-.28**	-.26*	.32	1.93	.12
	2. NLES	.009	-.07	-.13			
	3. BDI	.01	.16	.14			
	4. SES	.0003	.07	-.02			

Note. SES — a high score indicates a low social class according to Hollingshead and Relich's (1958) Two-Factor Index. MARSTAT — 0 for single and 1 for married. BDI — Beck Depression Inventory. NLES — Negative Life Events Scale.

^a Standardized betas at last step with all four predictors entered.

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 5
STEPWISE MULTIPLE REGRESSION ANALYSES AT IMMEDIATE POSTTREATMENT FOR FATHERS

Criterion outcome	Predictors	R ² Change	Simple correlation	Standardized Beta ^a	Multiple R	F	Significance
Father perception	1. BDI	.13**	.37**	.30*	.41	3.09	.022
	2. NLES	.03	.26*	.15			
	3. SES	.004	.14	.06			
	4. MAT	.002	-.21	-.06			
Father behavior	1. MAT	.04	-.20	-.30*	.32	1.78	.14
	2. BDI	.03	-.10	-.16			
	3. SES	.01	.12	.14			
	4. NLES	.02	-.05	-.15			
Child behavior with father	1. MAT	.09**	-.30**	-.36**	.41	3.26	.017
	2. BDI	.08*	-.18	-.30*			
	3. NLES	.003	.12	.06			
	4. SES	.001	.04	.03			

Note. SES—a high score indicates a low social class according to Hollingshead and Relich's (1958) Two-Factor Index. MARSTAT—0 for single and 1 for married. BDI—Beck Depression Inventory. NLES—Negative Life Events Scale.

^a Standardized betas at last step with all four predictors entered.

* $p < .05$

** $p < .01$

*** $p < .001$

TABLE 6
STEPWISE MULTIPLE REGRESSION ANALYSES AT 1 YEAR POSTTREATMENT FOR FATHERS

Criterion outcome	Predictors	R ² Change	Simple correlation	Standardized Beta ^a	Multiple R	F	Significance
Father perception	1. NLES	.13**	.36**	.27	.43	2.59	.04
	2. BDI	.16	.36**	.27			
	3. MAT	.18	-.08	.15			
	4. SES	.18	-.07	-.04			
Father behavior	1. SES	.11*	.33**	.35**	.38	1.76	.15
	2. MAT	.02	.09	.20			
	3. NLES	.01	.04	.16			
	4. BDI	.002	-.09	-.07			
Child behavior with father	1. NLES	.05	.23	.33	.31	1.08	.38
	2. SES	.02	.15	.15			
	3. MAT	.01	-.03	.13			
	4. BDI	.003	.04	-.07			

Note. SES—a high score indicates a low social class according to Hollingshead and Relich's (1958) Two-Factor Index. MARSTAT—0 for single and 1 for married. BDI—Beck Depression Inventory. NLES—Negative Life Events Scale.

^a Standardized betas at last step with all four predictors entered.

* $p < .05$

** $p < .01$

*** $p < .001$

(4, 61) = 3.09, $p < .02$. The simple correlations for two predictors were significant but the significant beta weight indicated that in combination only paternal depression made a significant contribution to the prediction of fathers' perceptions of their children's maladjustment. At 1-year followup, the multiple regression was significant, $F(4, 46) = 2.59, p < .04$. While none of the individual predictors reached significance, father reports of increased negative life events and depression had the highest beta weights and were significantly correlated with increased father reports of children's behavior problems. It is of interest to note that the beta weights for NLES and BDI were the same, indicating that they both had made an equal contribution to the prediction of fathers' perceptions of the child's behavior problems.

For the father behavior outcome criterion at the immediate posttreatment assessment, the multiple regression based on four predictors was not significant, $F(4, 63) = 1.78, p = .14$. However, there was a significant beta weight for marital satisfaction (MAT) indicating that in combination, marital satisfaction made the greatest contribution to the prediction of fathers' behaviors, that is, decreased marital satisfaction predicted increased paternal criticisms and physically negative behaviors with their children. At 1-year followup, the multiple regression was not significant, $F(4, 42) = 1.76, p = .15$. The significant simple correlation for socioeconomic status and father behaviors and the significant beta weight suggest that socioeconomic status (education and occupation) made the greatest contribution to fathers' behaviors, that is, lower social class status was associated with predicted increased father criticism and physically negative behaviors with their children.

For the child behaviors with father outcome criterion at the immediate post-treatment assessment, the multiple regression was significant, $F(4, 63) = 3.26, p < .01$. There was a significant correlation between marital adjustment (MAT) and child behaviors, and the significant beta weights for MAT also suggested that marital satisfaction made the greatest contribution to the child's behavior with fathers, that is, decreased marital satisfaction predicted increased observed child deviant behaviors with fathers. At 1-year followup, the multiple regression for four predictors was not significant, $F(4, 42) = 1.08, p = .38$. It is perhaps of interest to note that relative to the other predictors, negative life events had the greatest beta weight ($p = .08$) and made the greatest contribution to child deviant behaviors.

Since marital adjustment predicted father and child behaviors immediately posttreatment, we analyzed the married mothers group separately from the single mothers, using marital adjustment (MAT) instead of marital status as a predictor. Results indicated that marital adjustment was significantly correlated with mother perceptions immediately posttreatment ($r = .27, p < .05$) but did not have a significant beta weight when combined with the other three predictors. Marital adjustment was not significantly correlated with any of the 1-year outcomes and did not have a significant beta weight in any of the regression analyses.

Finally, for the teacher report outcome criterion, at the immediate and 1-year posttreatment assessment, multiple regressions were not significant. However, at the 1-year followup, marital status had the highest correlation with

teacher reports and the beta weights suggested that it made a significant contribution to the teacher reports, that is, children with single parents were more likely to have increased behavior problems in the classroom.

DISCUSSION

The purpose of this study was to understand the relative contribution of the psychological, interparental, and extrafamilial or environmental variables related to the short-term and long-term treatment outcome for families who had been treated for conduct problem children. The first important finding was that, depending on which criteria one chooses to evaluate clinical outcome, the set of predictor variables will be different. In this study, the data revealed that pretreatment level of depression, both maternal depression and paternal depression, were each significant predictors of mother and father reports of their children's maladjustment immediately posttreatment. For teacher reports of the children, there were no significant predictors at immediate posttreatment outcome. On the other hand, the combination of socioeconomic status and marital status made the greatest significant contribution to the prediction of mothers' critical and negative behaviors with their children immediately posttreatment. For fathers, marital satisfaction made the greatest contribution to the prediction of their negative behaviors with their children. Correspondingly, for children, marital status for mothers and marital satisfaction for fathers made the greatest significant contribution to the children's deviant behaviors. In summary, for the immediate posttreatment assessment outcome criterion it appears that higher parent depression predicts more negative mother and father perceptions of child adjustment, while single-parent status or marital conflict predicts more negative behaviors and higher child deviance on home observations. These results confirm a study by Forehand and Brody (1985) who also found marital satisfaction associated to parent-child behaviors and depression related to mother perceptions of the child.

The next significant finding was assessing whether the same predictors emerged at our follow-up assessments one year posttreatment. Results showed that for both mothers and fathers, the amount of negative life stress (NLES) which occurred during the year following treatment emerged with at least as much weight as depression as a predictor of parent reports of child maladjustment. In terms of parent behavior outcome criteria, for mothers the exact same two predictors, marital status and socioeconomic status, were still significant predictors of maternal criticisms and physically negative behaviors with their children at 1-year followup. For fathers, socioeconomic status emerged as a more significant predictor of long-term outcome of negative behavioral interactions with their children. For children, marital status made the most significant contribution to the prediction of children's behaviors with their mothers while the amount of NLES occurring in the year following treatment made a more significant contribution to children's behaviors with fathers. Finally, according to teacher reports at 1-year followup, marital status made the greatest significant contribution to the prediction of children's adjustment. In summary, one year later we note the influence of not only personal parent

adjustment and intrafamilial marital adjustment but also the stronger influence of extrafamilial factors such as negative life events and socioeconomic status. It is also noteworthy that at 1-year followup a nearly identical order and similar beta weights for the set of predictors occurred for both mother and father perceptions and for the parenting behavior outcome criterion. For the children's behavior, mother marital status and depression made the greatest contribution to the level of observed child deviance and for fathers negative life events and socioeconomic status contributed the most.

These findings are important in that they present the relative contribution of each of the predictors to the different outcome variables. The data confirmed earlier studies using similar predictors as to the importance of socioeconomic disadvantage, negative life stress, single-parent status and depression as important predictors of treatment outcome. The data also provide new information that depression is just as important a predictor for paternal reports of child adjustment as it is for maternal reports. In addition, the 1-year data indicate that for observations of mother or father parenting behaviors the predictor variables are nearly the same, with social class and marital status or adjustment being the most important. Perhaps the most important outcome criteria are the independent home observations of the children's behaviors and teacher reports since young children and teachers may be less likely to be influenced by bias and performance demands than are their parents. The results indicated that marital status was the best predictor of the amount of child deviance according to our home observations and teacher reports. For families where a father was present, the amount of negative life stress reported by fathers was the best predictor of the amount of observed child deviance. These findings are consistent with some of the recent work by Elder, Ngyuen, and Caspi (1985) and Goldsmith and Radin (1987), who have reported that fathers who have experienced unemployment or income loss tend to be less nurturant and more punitive or rejecting in their interactions with their children. They hypothesize that such negative fathering behavior increases the child's risk for social-emotional problems and deviant behaviors.

However, despite the fact that this study helps to clarify the relative importance of different predictor variables for different outcome variables, it must be noted that the actual variance accounted for by any single significant predictor variable was small, ranging from a low of 7% to a high of 21% with most from 10-15%. Even when predictor variables were held in combination, the variance accounted for from the significant sets only ranged from 12-28%. These data suggest that these variables may have limited practical utility and that we may need to look elsewhere for predictors that determine a family's response to parent intervention programs.

Although one must be cautious because correlational studies and multiple regression procedures do not indicate cause and effect relationships, these results, nonetheless, suggest some possible implications for clinicians. There is a need to identify and treat conduct problem children when they are young, especially those who come from socioeconomically disadvantaged families with highly stressed and depressed mothers or fathers. There is a need to bolster the impact of parent training programs both by lengthening their treat-

ment programs and by providing ongoing expanded therapy which focuses on families' specific needs such as life crisis management, depression, problem-solving, budget planning, marital therapy, and so forth. Only by addressing the broader ecological needs of families can we begin to reach those 30-50% (Forehand et al., 1984; Jacobson, Schmaling & Holtzworth-Monroe, 1987; Wahler & Dumas, 1984) of families who fail to benefit from the traditional parent training approaches.

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