Multilevel Selected Primary Prevention of Child Maltreatment

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Few treatment studies and even fewer primary prevention studies have demonstrated successful reduction of child maltreatment. Successful preventive interventions have often been lengthy and expensive; shorter programs have been didactic and ineffective. The present investigation relied on a 7-level model of successful parenting to mount a time-limited, “selected” prevention effort with high-risk mothers. This program included modeling, role-playing, Socratic dialogue, home practice, and home visits. The study demonstrated effective intervention at every level of the model, including improvements in (a) parenting skills, (b) developmentally appropriate interventions, (c) developmentally appropriate beliefs, (d) negative affect, (e) acceptance of a responsible parent role, (f) acceptance of a nurturing parent role, and (g) self-efficacy. Directions for future research are considered.

Child maltreatment is a serious problem in the United States. There were 1.9 million reports of child maltreatment in a survey by the National Center for Child Abuse and Neglect (1996) data system; however, many cases are unsubstantiated, and thus, it is clear that this is an underestimate of actual levels of abuse (Zellman & Faller, 1996). Recent data suggest that many deaths recorded as unintentional injuries are actually due to child maltreatment (Ewigman, Kivlahan, & Land, 1993). It is also the case that the risk factors and long-term outcome for sexual abuse are very different than for physical abuse and neglect. This article focuses only on physical abuse and neglect, considering the precursors to those family factors that need to change to avoid maltreatment.

There are many factors associated with physical abuse and neglect as maltreatment, including the community in which the child resides, the cultural practices within that community, and the child’s ethnicity and relationship with peers. The family, however, has been viewed as the most powerful influence on maltreatment (Hays & Jones, 1994). Consequently, the majority of interventions to reduce child maltreatment have focused on abusive parents. Most of these interventions to prevent abuse have used didactic instruction only and have not been shown to be effective (Daroc, 1988). A smaller number of programs have used behavioral techniques such as modeling, practice, feedback, and positive consequences and have included home visiting that has been extended over many months or even years (Olds et al., 1997). These programs have shown great success but at very high initial costs. The argument regarding cost effectiveness that this intervention removed women from Aid to Families With Dependent Children rolls may be negated by the new welfare-to-work laws. In contrast, a modestly budgeted prevention program might be more likely to be widely implemented.

There have been a small number of behavioral treatment rather than prevention studies shown to be effective with abusing parents once they have been charged with abuse (e.g., Azar, Povilaitis, Lauratti, & Pouquette, 1998; Wolfe, 1994). Other treatment models have been applied to special populations such as children with developmental disabilities (e.g., Lutzker, Bigelow, Doctor, Ger-
shelter, & Greene, 1998) and parents with intellectual disabilities (Feldman, 1998). However, this study represents one of the first time-limited demonstrations of multicomponent, selected primary-prevention (Institute of Medicine, 1994) programs for parents who are at high risk of, yet not actively maltreating, their children.

The current demonstration is important for the area of maltreatment because of the ineffectiveness of many parent training programs and for the general parenting literature because of the lack of prevention studies. Durlak and Wells’s (1997) meta-analysis revealed the effectiveness of most prevention programs categorized by program type. When each subgroup was considered, only parent training (10 studies reviewed) failed to reduce problems or increase competencies. The virtual absence of proven effectiveness of preventive training for increasing parenting competence in the specific areas of maltreatment reduction was indicated as a major challenge to interventionists and researchers and is the primary focus of this study.

There is a dearth of prevention studies in child maltreatment, evidence of the difficulty in recruiting and retaining individuals who are not mandated for treatment (although even those who are mandated are difficult to keep in treatment; Lutzker et al., 1998). This may be the result of several key factors. Specifically, such findings require very large study populations to demonstrate statistically significant differences in a selected primary-prevention program, even though the effects may be clinically significant for many of the families. Additionally, there is no constituency demanding action, as there is when one parent is actively maltreating the child (Peterson & Roberts, 1992). There are, therefore, only a few excellent models for prevention of child maltreatment (e.g., Lutzker et al., 1998; Wolfe, 1988), as most describe how to treat rather than prevent abuse and neglect.

Peterson, Gable, Doyle, and Ewigman (1997) outlined a program of selected primary prevention (Institute of Medicine, 1994) for child maltreatment and described many of the clinical methods used in this model (please follow each step of the model in Figure 1). As can be seen in Figure 1, the model presents seven specific hypotheses, each drawn from our prior model of successful parenting. We anticipated that our project would result in (1) increased parent skills; (2) awareness of developmentally appropriate behavior management interventions; and (3) accurate beliefs and (4) positive affect, which would reduce erroneous beliefs about young children’s abilities and anger-related responses toward the child (which are closely intertwined). Depressed mothers often alternate between neglect and abuse (Lahey, Conger, Atkeson, & Treiber, 1984). Attribution of a child’s problematic behavior to intentional provocation (“The child did this just to aggravate me”), for example, leads most often to initial avoidance, followed by explosive response when the parent’s tolerance threshold is exceeded. Neither of these extremes is a particularly effective child behavior management strategy.

Finally, if an individual has not experienced changes in these first four areas, that person will find it difficult to accept the responsibilities of being (5) the individual with primary responsibility for the child and (6) a nurturing caregiver and will lack the motivation that comes from finding (7) one’s sense of efficacy in the previous six skills. Each of these facets is considered briefly here, and each is explicitly measured in evaluation of the intervention. This is the first empirical attempt to examine these variables, partially because there are few empirically validated measures, and thus, measures needed to be created for this study. In addition, because past research did not fully articulate the direction of each factor and the degree to which each interacts, we do not test the entire model per se using a path analysis, but rather, we consider the instruments we have used to examine each individual facet. Later research will be necessary to determine directionality and the mutual influence of the goals.

Figure 1. Multilevel conceptual parenting prevention model.
Furthermore, multimodal interventions require many different techniques. Skill training requires initial didactic explanation followed by modeling, rehearsal, and positive feedback. Where there are barriers to skill acceptance, the therapist may need to use Socratic dialogue or what some have called “the Columbo technique” (e.g., “but you just told me you don’t believe the fear you had as a child helped... something helped, maybe the love your mother had for you but not the fear. Now you are telling me you need to use fear to change, Chris. I’m confused. Can you explain this to me?”; Resnicow et al., 2002).

After skill training, there are additional clinical techniques necessary to achieve the other six goals we specified. Eyberg and Ross (1978) have described several methods for improving our second goal (see Figure 1) by altering parents’ understanding of their child’s development. As another example, social psychology has contributed a number of techniques (often used in television commercials) to alter beliefs (Zimbardo & Leippe, 1991), as seen in our third goal, and the use of visual metaphor can be a powerful way of altering barriers to changes in both skills and beliefs (McClure, 1989). When a parent arrives at this point, skilled, with developmental awareness, accurate beliefs, and positive emotions toward the child (Crittenden, 1988), then the sense of self-efficacy, the last of our goals, is only a matter of support, practice, and positive feedback (both external and self-reward) during parental intervention.

The completion of these goals would suggest a successful treatment, but unless the treatment can be effectively disseminated, it is of no use (Ammerman, 1998; Wissow, 1996). Thus, the present study focused not only on the seven goals but also on developing scripts for group facilitators and follow-up scripts for home visitors, methods of participants’ taking notes (even if their spelling was phonetic rather than from a dictionary, most could read their own writing), handouts, and home practice. Further, our program was one of the least costly treatments in the literature that focused on preventing maladaptive treatment of children by their parents and was very effective yet time limited (16 weeks). We focused on selected populations where there were clear signs of potential child maltreatment but no legal reason to label them as poor parents (i.e., parents not already involved with the court system).

Method

Participants

Screening. Mothers of children from 18 months to 4 years of age who was between 18 months and 4 years of age because (a) past studies have found the greatest change in parents of preschoolers (Eyberg, Edwards, Boggs, & Foote, 1998); (b) although infants require different kinds of care, children in this age range can be assisted by the same techniques they will require throughout childhood; and (c) children in this age range are most at risk for child maltreatment (Daro, 1988). To be included in our study, women needed to be Medicaid eligible (as an index of low-income status) and to have less than 2 years of college work (the modal education level was 12th grade, and ranged from 7th grade to 48 college credits); (c) self-reported anger of at least 2 toward the child on a 1 (not angry) to 5 (ready to explode) scale; and (d) self-reported use of physical discipline.

Women were ineligible if there was a specific reason that the mother would not be able to profit from the intensive training we offered because of lack of communication ability or high levels of interfering psychological distress. Specifically, if mothers did not speak fluent English or showed diagnosable levels of serious depression or delusional symptoms (assessed in the first of the pretest questions with the Diagnostic Interview Schedule [3rd ed., rev.; DIS–III–R]; Robins, Helzer, Cottler, & Golding, 1989; DIS–IV criteria were not available at the time the study began), they were not included. Women at clinical levels of these forms of psychopathology according to Diagnostic and Statistical Manual of Mental Disorders (3rd ed., rev.; American Psychiatric Association, 1987) criteria for diagnosis were offered referrals for services more appropriate to these acute difficulties. These women were offered the opportunity to be reassessed 6 months later for potential enrollment in the project. Fifteen otherwise eligible women (5%) were excluded for acute clinical symptomatology; 2 reappeared at a later date. No women were evaluated to be mentally retarded by the Adaptive Behavior Scale (Nihira, Leland, & Lambert, 1993), but this also would have been an exclusionary criterion.

Participant payments. Participants were paid the following amounts at the time of treatment: $3 per screening, $20 for pretest (× 2 = $40), $20 for posttest (× 2 = $40), $10 per group (× 16 = $160), $10 per home visit (× 16 = $160), and $1.00 per each day of daily diary (7 × 16 = $112). Each payment given was half of the amount of the participant’s total payment. The rest was held in escrow until the women completed the entire program. Thus, including $25 for the 1-year follow-up, women in the intervention group could earn up to $540 if they remained in the program. Women in the diary control group could earn $220, and women in the no-diary control group could earn up to $108. Our Campus Institutional Review Board for Human Participants would not allow us to offer money as an incentive but only to reimburse a participant for labor entailed. Thus, the two control groups discussed in the next section received differing amounts.

Design

An unusual design feature deserves discussion here. Initially, a randomly assigned treatment group and control group were examined. There were significant treatment effects at posttreatment on all seven of the domains making up the model, but many of these differences had slipped just below the p < .05 level of significance at 1-year follow-up (e.g., p < .14), raising the issue of whether there was sufficient power to obtain effects. There were also sizeable time main effects, and it was clear that, on most variables, both groups (treatment and control) were improving. Because the diary control group had received a detailed clinical interview that asked how a mother had been parented and how that mother was currently

2 The treatment technology from scripts to handouts and home practice information may be obtained from the Clearinghouse on Child Abuse and Neglect (Caliber Associates, 10530 Rosenhaven Street, Suite 400, Fairfax, Virginia 22030), a federally funded distribution of treatment information.

3 Women were selected for several reasons. Women were available at the WIC’s clinic; men were not. More than half of the women had no stable male figure in their lives, and it was rare in these low-income families for a male figure to be the primary caregiver. Where a male was present in the home, he was invited to listen to an audiotape of the sessions and be actively involved in the home visit. Only one father figure elected to do this.
parenting her own child, this interview might have been reactive, resulting in low-level treatment effects. Also, each day for 16 weeks, the mothers completed a diary on discipline and affect. The diary also might have produced change, just as self-monitoring has produced change in other areas of psychology (Shapiro, 1984; Zhu, Stetch, Balbanis, & Rosbrook, 1996). We received anecdotal data to this effect (e.g., “When I saw that day after day I was always angry and never happy, I resolved to change”).

We thus became concerned that the diary control group may not have been a true no-treatment control because of the potential influence of the clinical interview plus diaries (i.e., perhaps the interview and the diary constituted a weaker but measurable sign of treatment). Accordingly, we sought intramural funding from the University of Missouri—Columbia and were able to gather data on a separate no-diary control group with no clinical interviews or even daily self-observations derived. This group failed to differ from the diary control group on demographics (Table 1) or any of the dependent variables tested ($p < .30–.97$) with the exception of self-efficacy, in which the diary-only group showed a marginally significant advantage over the no-diary group (see Table 2).

Assignment to intervention or control groups. Initially, two groups of women meeting the inclusion criteria were randomly assigned to either a treatment group or to the diary control group until 12 women per group were reached (total of five cohorts), using stratified blocking to ensure equivalent distributions of child age and race in the three groups. The no-diary control group described previously was made up of women who were consecutive referrals from WIC clinics. Between eligibility screenings and protest, and prior to randomization, a large number of women (103) refused further participation; many refused to participate because of the new Welfare to Work Act, which had just been implemented in this Midwest state by the state legislators, resulted in mandated employment. Additionally, many potential participants had moved (characteristic of this population) or had different life circumstances (e.g., new stepchildren in the house), and some had simply changed their minds. We suggest that the remaining sample represents a motivated but highly problematic subset (most had not found jobs or moved to better locations because their lives were too chaotic to work or move). This is perhaps the ideal prevention sample.

Of 61 women who were originally pretested and randomized to the treatment condition, 78% completed the 16-session intervention and posttesting (outlined in more detail in our previous work; Peterson et al., 1997). Seventy-one percent of the diary control group and 62% of the no-diary control group were retained through posttest. Multiple attempts to keep mothers involved in both treatment and control groups were made (e.g., six calls at minimum were made to all participants, make-up audiotapes that required mothers to answer questions regarding the curriculum were used, and missed home visits were rescheduled). At the 1-year follow-up, 69% of the treatment group, 52% of the diary control group, and 49% of the no-diary control group were available for the final assessment.

Demographics for the two control groups of women completing posttesting and demographics for the combined controls and treatment group are shown in Table 1. As can be seen, the stratified random assignment strategy produced groups equivalent on all of the major demographic variables. Similarly, Table 3 demonstrates that the treatment and control groups (read down columns) failed to differ on any of the primary dependent variables at pretest.

**Intervention and assessment agents.** The group facilitator and home visitor each had a bachelor’s degree and substantial group and individual experience (over a decade) with low-income families. The three follow-up interviewers had similar experience but, as a mandate from the funding agency, they were not members of the research laboratory, did not meet with staff, and so forth. The pre- and posttest interviewers were advanced clinical or counseling graduate students, with training in clinical interviewing.

**Measures**

Measures were targeted toward each of the levels of intervention shown in Figure 1. All coding was done by undergraduate and graduate students who were unaware of the experimental hypotheses or the women’s assignment to treatment or control groups. Because abuse or neglect can rarely be observed, we developed proxy measures, described below. Changes in such proxy variables mark a successful endeavor. Finally, it can be argued that improved parent skills, beliefs, and answers on the measures to which they responded can be viewed as a positive goal in and of itself.

Parenting adaptive behaviors. Two instruments were included here, as this area has been the primary focus of past research and is most directly related to successful parenting. First, a clinical interview conducted before treatment, after treatment, and at 1-year follow-up asked the mother to estimate the frequency with which she found it necessary to discipline her child each week and requested that she select from a list of discipline strategies the ones she regularly used. This list included items such as shouting and threatening and physical actions such as slapping or spanking (designated “harsh discipline” for scoring purposes) and items such as ignoring, time-out, and withdrawal of privileges (designated “gentle discipline”), both of which were coded with 100% independent coding agreement by Lizette Peterson and George Tremblay. The numbers of harsh and gentle parenting strategies, respectively, that the mother reported using were included among the indexes of parenting behavior. The woman was also asked explicitly whether she used spanking to discipline her child and, if she did, the number of times each week she actually spanked the child was reported and later tabulated.

Second, a daily diary was kept by all women in the treatment group and in the initial control group (with 85% completed diaries) throughout each day of the 16-week program. The diary produced a more molecular self-report of disciplinary techniques. Women were asked to briefly describe child misbehaviors and their own disciplinary responses. These descriptions were subsequently coded (for the first three groups, $k = .92–.98$, other groups trained beyond criterion of $k = .80$) for use of various discipline strategies. The vast majority (over 95%) of women demonstrated sufficient literacy to complete the diary after one-on-one training. The small number of women with literacy problems received special training and, when possible, were linked to a family member to assist in completing the diary. Because these measures might have had treatment effects, they were not included in the no-diary control group, and thus, this group of analyses has less power to detect possible effects.

Knowledge of developmentally appropriate interventions. A questionnaire developed for the current study gave five vignettes concerning typical child problems for children of different ages. There was 100% agreement by two doctoral-level psychologists not involved with this program, each with several years of child development experience, concerning the correct solution to each of the child’s problems. Parents received a score reflecting the level of appropriate responding to the five questions from four undergraduate women uninformed as to treatment assignment or study hypoth-

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4 Some of the measures we initially used were inappropriate for a prevention study. For example, the Eyberg Child Behavior Inventory (Eyberg & Ross, 1978) failed to show clinical levels of behavior problems in the children at pretest. Thus, floor effects existed with several of our measures and they are not pursued here.

5 Eighty-eight percent of diary sheets for the treatment group, and 82% of those for the diary control group, were returned with behavioral information completed. Missing values were replaced using a linear interpolation program from SPSS (Statistical Package for Social Sciences, 1997), which estimates missing data from adjacent values in the series for that participant. In any given week, an average of 4.75 values, or about 6% of the data, were replaced for each variable of interest in these analyses.

6 The Knowledge of Parenting Scale was used only with the last two cohorts of intervention ($n = 14$), diary controls ($n = 11$), and no-diary controls ($n = 25$).
Table 1
Demographic Comparison by Treatment Condition

<table>
<thead>
<tr>
<th>Demographic characteristic</th>
<th>Control condition With diary (n = 32)</th>
<th>Without diary (n = 25)</th>
<th>Group comparison Treatment (n = 42)</th>
<th>Control (combined n = 57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s age (years), M (SD)</td>
<td>29.03 (6.51)</td>
<td>27.56 (6.03)</td>
<td>27.81 (5.48)</td>
<td>28.39 (6.29)</td>
</tr>
<tr>
<td>Mother’s education (years), M (SD)</td>
<td>12.22 (1.07)</td>
<td>12.04 (1.14)</td>
<td>11.90 (1.45)</td>
<td>12.14 (1.09)</td>
</tr>
<tr>
<td>WAIS–R Vocabulary Score, M (SD)</td>
<td>8.13 (2.11)</td>
<td>7.96 (2.32)</td>
<td>9.07 (2.92)</td>
<td>8.05 (2.18)</td>
</tr>
<tr>
<td>Race, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>9 (28)</td>
<td>6 (24)</td>
<td>7 (16)</td>
<td>15 (26)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>19 (59)</td>
<td>18 (72)</td>
<td>32 (76)</td>
<td>37 (65)</td>
</tr>
<tr>
<td>Other minority</td>
<td>4 (13)</td>
<td>1 (4)</td>
<td>3 (7)</td>
<td>5 (9)</td>
</tr>
<tr>
<td>No. married, n (%)</td>
<td>16 (50)</td>
<td>10 (40)</td>
<td>26 (62)</td>
<td>26 (46)</td>
</tr>
</tbody>
</table>

Note. WAIS–R = Wechsler Adult Intelligence Scale—Revised.

es. Independent coder ratings on 20% of the protocols showed acceptable reliability (ses = .83 for pretest and .82 for posttest scores, respectively). This measure was added later in the study and thus not given to the first three randomly assigned cohorts.

Parenting beliefs. The Parent Opinion Questionnaire (Azar, Robinson, Hekimian, & Twentyman, 1984) is a well-known measure of unrealistic beliefs parents hold about children. The 80 items ask parents to agree or disagree with statements regarding child behaviors. Higher numbers indicate more age-inappropriate beliefs. This measure has successfully discriminated abusive from nonabusive mothers in the past (Azar et al., 1984).

Affect. Affect was measured with a self-report measure drawn from a standardized measure (Novaco, 1978). The Novaco Anger Scale was used as a model to construct a 10-item scale specific to the domain of child elicited anger (the Child Anger Scale), which was administered as an appendage to the Novaco. Cronbach’s alpha for the entire measure was .95; the alpha for the focus of this study, the Child Anger Scale alone, was .92. Because of an error in interviewer instructions, there were no data from the no-diary control group on this instrument.

Parent role. The measure of the parent role, also created for this study, was the Parent Problem-Solving Scale, in which women were presented with four problem scenarios involving young children (i.e., neighborhood bullies, temper tantrums, swearing, and running out of groceries) and asked to generate solutions. All of the problem scenarios were exacerbated by resource constraints such as no spare cash, no available babysitter, and no car, which were held constant across families (a safeguard not held constant in other problem-solving measures, e.g., Hansen, Pallotta, Christopher, Conaway, & Lundquist, 1995). Following the “brainstorming” period (i.e., a time during which mothers were asked to list all the ideas they could create concerning potentially effective solutions), the mothers were asked to select the solution they would prefer to implement from the pool of potential solutions they had generated. Solutions were assigned an effectiveness rating on the basis of both short- and (where applicable) long-term

Table 2
No-Diary Control Group Versus Diary Control Group (Pretreatment, Posttreatment, and 1-Year Follow-Up)

<table>
<thead>
<tr>
<th>Construct and measures</th>
<th>No Diary</th>
<th>Diary</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td></td>
<td>M (SD)</td>
<td>M (SD)</td>
</tr>
<tr>
<td>1. Parenting adaptive behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weekly frequency of spanking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harsh discipline strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gentle discipline strategies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Developmental awareness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of appropriate interventions</td>
<td>2.88 (0.54)</td>
<td>2.91 (0.60)</td>
</tr>
<tr>
<td>3. Beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Opinion Questionnaire</td>
<td>10.16 (6.85)</td>
<td>8.76 (6.53)</td>
</tr>
<tr>
<td>4. Affect</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Novaco Child Anger Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Parent role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PPS Ability</td>
<td>2.97 (0.71)</td>
<td>2.99 (0.84)</td>
</tr>
<tr>
<td>6. Mother role</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child oriented</td>
<td>60.19 (36.80)</td>
<td>62.86 (39.09)</td>
</tr>
<tr>
<td>Parent oriented</td>
<td>19.67 (15.90)</td>
<td>17.83 (14.91)</td>
</tr>
<tr>
<td>7. Parenting efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent efficacy</td>
<td>38.40 (6.16)</td>
<td>37.80 (5.93)</td>
</tr>
</tbody>
</table>

Note. Pre = pretreatment; Post = posttreatment; PPS = Parent Problem-Solving Scale.

Dashes indicate that, unlike all other measures (taken pretreatment, posttreatment, and follow-up only), these measures were monitored by the parents daily. Because such daily monitoring might result in positive experimental effects, they were deliberately removed from this control group. Dashes indicate that because of an error in interviewer instructions, there were no data from the no-diary control group on this instrument. Dashes indicate that the 1-year follow-up requiring two trained observers was deemed too expensive and thus, regrettably, left out.
implications and on the extent to which implementation of the solution would require constrained or otherwise unavailable resources. A team of one graduate and four undergraduate students, all women, were trained to a criterion kappa of at least .80 when compared against a test bank, and 20% of all subsequent protocols were independently coded by multiple raters to maintain reliability. Kappas for all coders ranged from .83 to .93, with a mean of .87, at pretest and from .81 to .96, with a mean of .88, at posttest. The primary variable for the instrument was the mothers’ preferred problem solution.

Mother role. The Child Instruction Task (Tremblay, Nainys, & Peterson, 1997; similar to Forehand & McMahon’s, 1981, Parent’s Game) is a simulation of cleaning up a room following a typical play period. The task required the mother to instruct her child to find a specific object from 20 objects scattered on the floor and place each object in a bin with a brightly colored circle on it (e.g., “Put the yellow plastic duck in the bin with the red circle”). The mother was not allowed to touch the child or the objects, but she was permitted to use any instructional style she wished. Her strategies were audiotaped, transcribed, and subsequently coded for various aspects of the parent–child interaction. Over the course of the study, six female undergraduate students, two female graduate students, and one male graduate student, all uninformed as to the study’s hypotheses and the mothers’ intervention or control status, participated in this coding process. Coder reliability for assignment to type of response was acceptable (intercoder kappa values ranged from .61 to .95, with a mean of .80). This task allowed a measure of the extent to which mothers accepted a positive nurturing role versus negative controlling role to assist the child in completing the task by rewarding the child verbally for number of tasks performed correctly (i.e., spontaneous verbal praise, positively labeling cooperative behavior, etc.).

Parent self-efficacy. Parents rated their level of agreement with a 10-item scale (Parent Efficacy Scale) created for the present study, reflecting parents’ sense of their own high or low degree of efficacy in various interactions with children. Cronbach’s alpha, reflecting internal consistency of these 10 ratings, was .77 at pretest and .85 at posttest.

Social validity. This instrument examined the applied significance of the study by directly assessing participants’ satisfaction with the tools they had learned and the treatments they had received (e.g., Kazdin, 1977). Two types of questions were used to ask the treatment–group members about their postintervention impressions of each aspect of the program. First, the questionnaire outlined the content of each session, and participants were asked to indicate the extent to which that treatment would assist them in their parenting. Second, parents were asked the extent to which they would use each of the individual techniques in their parenting. Answers were summed across the 15 treatment sessions (the 16th session was not content oriented). The anonymity of the Social Validity Questionnaire was stressed. Note that not even code numbers were used, so that it was not possible to link responses to individual participants. The large majority, 89%, of the treatment sample completed and returned the questionnaire by mail.

Follow-up. Most of the measures described thus far were examined at 1-year posttreatment. Decisions regarding inclusion of measures are described with treatment effects.

### Intervention

Intervention was delivered to five successive cohorts, with groups beginning with 12 participants but, because of attrition, ultimately ranging from 7 to 11 (M = 8.6) in the treatment condition and 2 to 10 (M = 7.4) in the diary control condition. The no-diary control condition did not involve randomly assigned groups and, thus, at any one time had between 3 and 9 women involved. Each week, women in the treatment group received the curriculum in a clearly nondidactic manner in a group therapy session that involved continuous interaction between group members and the group facilitator. Each session began with 1 or more women sharing an experience that happened the preceding week that reminded them of their love for their child, a question period during which anonymous questions or comments (placed on 3 × 5 in. cards in a closed box) were shared, and a review of the previous week’s curriculum.

A variety of cognitive restructuring techniques such as role-playing, Socratic dialogue, modeling, and discussion of barriers to the curriculum were used. Once every week, the home visitor, who had been trained to a high criterion of covering intervention goals, spent approximately 90 min...
with each mother, interacting with her positively, individualizing the curriculum for her family circumstances, and answering any questions. Each mother received a binder containing an outline of the group curriculum on which she could take notes, a set of handouts to use as reference materials for certain tools, home practice assignments for each week, and instructions for “tuning in” to her more positive feelings for her child each week with specified exercises.

Because the curriculum itself, in the absence of outcome data, is outlined in detail elsewhere (Peterson & Brown, 1994) and the technology is described elsewhere (Peterson et al., 1997), they are described only briefly here. The first few sessions focused on gentle parenting and general skills such as problem solving and time management. Parents then role-played and practiced many positive-parenting techniques such as child-led play, distraction, “catching the kid being good,” and effective compliance strategies (Forehand & McMahon, 1981). Next, anger management and time-out procedures were covered. Then, child health and safety issues were discussed and losing emotional or disciplinary control or leaving someone with the child who might lose control were targeted. A review session was held in which the women actively combined techniques to respond to a series of actual child behavior problems. In the final session, a graduation ceremony was held with significant others in attendance, and women were presented with a framed, calligraphed description of the tools that each individual mother had chosen to target and had promised publicly to use. The significant others were asked to pledge to support the mothers’ use of these new techniques. Such public commitment has been related to maintenance of behavior change (e.g., Markham, Dougher, & Wulfert, 1993).

**Implementation Checks**

During each weekly treatment meeting, the group facilitator’s success in delivering the 10–14 critical components of the intervention for that week was monitored and recorded by a second staff member. In addition, all group sessions were audiotaped and reviewed by Lizette Peterson for purposes of providing clinical supervision and feedback for the group facilitator. According to both of these methods of oversight, all curriculum components were delivered in 100% of the treatment sessions (this high rate is likely because of the use of a scripted treatment manual by the group facilitator).

**Results**

**Group Comparability and Characteristics**

One-way analyses of variance (ANOVAs) or chi-square values (for categorical data) were examined for pretreatment group differences in mother’s age, race, education level, marital status, and Wechsler Adult Intelligence Scale—Revised (WAIS–R; Wechsler, 1981) Vocabulary subtest score. Separate analyses were conducted between the two control conditions and between the combined controls and the treatment group. With the exception of mothers’ WAIS–R Vocabulary subtest scores between treatment and control groups, $F(1, 97) = 3.95, p = .05$, no significant differences between the groups emerged. It is important to note that the mean difference between WAIS–R scores for the treatment group ($M = 9.07$) and the controls ($M = 8.05$) was not clinically significant, despite the statistically significant result.

**Treatment Outcome**

Treatment effectiveness was measured using rigorous analyses from pretest to posttest and again from pretest to 1-year follow-up. Treatment effects were evaluated using a series of 2 (intervention vs. combined controls; between groups) × 2 (pretest vs. posttest or 1 year follow-up; within groups) ANOVAs, one for each of the constructs proposed in the multilevel model (see Figure 1). There were seven separate hypotheses that constituted logical groups of analysis (e.g., there is no reason decreasing anger would cause a change in developmental knowledge). Thus, we used alpha adjustment to the probability values within but not across these separate areas. Correction across different areas would inflate Type II error. The focus was on statistical interactions between time and treatment main effects (i.e., test of simple effects). These analyses revealed greater improvements in treatment as compared with control conditions, both from pretreatment to immediate posttreatment and, more important, during the entire year and a half from pretreatment to 1-year follow-up. The three measures of the first construct were evaluated by a multivariate analysis of variance (MANOVA) for the pre–versus posttreatment answers. Regression was used to analyze the daily diary methods. For the rest of the measures, univariate ANOVAs were conducted. The effects of interest, the Treatment Condition × Time interactions, are reported in Table 4. Note that the tables give the simple main effects for time and treatment, but the finding of the most relevance to this study is the interaction of Treatment × Time (i.e., Did treatment have more influence than time?). Further, consider that the most robust analyses are used. As noted earlier, we have compared pretest to posttest and pretest to 1-year follow-up. It would be easier to show significance with an analysis that examined a small (but significant) increase to posttest and then a failure to decrease at follow-up.

**Parenting adaptive behaviors.** Interview measures of harsh discipline and gentle discipline revealed a significant Treatment × Time interaction using MANOVA, Wilks’s criterion. Harsh discipline as reported in interviews decreased in the treatment group at posttest, whereas in the control group, no decrease was seen. Finally, interview reports of gentle discipline increased in both treatment and control groups (see Table 3).

The diary data, in the form of daily frequencies rather than pre–posttest means, were analyzed separately using a strategy more suited to time-series data. Mean daily frequencies of ignoring, time-out, spanking, and other physical punishment were plotted across the 16 weeks of data collection, by treatment condition. A regression line was then fitted to each plot. Finally, a t test was used to compare the mean regression coefficients for treatment versus control conditions for each parent behavior. Planned ignoring increased as hypothesized for the treatment group over time, while decreasing for the control condition, $t(79) = 2.36, p < .02$. Use of time-out also increased for the treatment group, while declining for the control group, $t(79) = 2.71, p < .008$. Mothers’ own direct reports of spanking followed a similar but nonsignificant pattern, $t(79) = −1.27, p < .21$. Mother’s descriptions of behavior that met our coding criteria for general physical punishment showed greater declines over time for the treatment group than for the control group, $t(79) = −2.83, p < .006$.

**Knowledge of developmentally appropriate interventions.** Mothers’ responses to challenging developmentally appropriate situations presented in the Knowledge of Parenting Questionnaire grew more effective over time for the treatment (see Table 3) but not for the control group.

**Parenting beliefs.** Mothers’ unrealistically high expectations of their children (Parenting Opinion Questionnaire; Azar & Rohrbeck, 1986), as shown in Table 3, decreased over both groups but significantly more for the treatment than the control group.
Table 4
Analysis of Variance by Treatment Condition

<table>
<thead>
<tr>
<th>Construct, measure, and variable</th>
<th>Pre and post</th>
<th>Pre and 1-year follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p</td>
</tr>
<tr>
<td>1. Parenting adaptive behaviors: MANOVA*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(3, 68) = 0.94</td>
<td>.43</td>
</tr>
<tr>
<td>Time</td>
<td>F(3, 68) = 25.89</td>
<td>.0001</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(3, 68) = 9.76</td>
<td>.0001</td>
</tr>
<tr>
<td>2. Developmental awareness: Knowledge of appropriate interventions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 49) = 2.37</td>
<td>.13</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 49) = 18.95</td>
<td>.0001</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 49) = 13.78</td>
<td>.0005</td>
</tr>
<tr>
<td>3. Beliefs: Parent Opinion Questionnaire</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 97) = 6.53</td>
<td>.01</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 97) = 41.84</td>
<td>.0001</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 97) = 5.75</td>
<td>.02</td>
</tr>
<tr>
<td>4. Affect: Child Anger Scale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 72) = 0.00</td>
<td>.95</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 72) = 0.14</td>
<td>.71</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 72) = 9.26</td>
<td>.003</td>
</tr>
<tr>
<td>5. Parent role: PPS abilityb</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 87) = 4.83</td>
<td>.03</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 87) = 3.54</td>
<td>.06</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 87) = 9.80</td>
<td>.002</td>
</tr>
<tr>
<td>6. Mother role: No. of tasks rewardedc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 66) = 0.08</td>
<td>.78</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 66) = 1.69</td>
<td>.20</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 66) = 9.89</td>
<td>.003</td>
</tr>
<tr>
<td>7. Parenting efficacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tx</td>
<td>F(1, 97) = 1.10</td>
<td>.30</td>
</tr>
<tr>
<td>Time</td>
<td>F(1, 97) = 31.87</td>
<td>.0001</td>
</tr>
<tr>
<td>Tx × Time</td>
<td>F(1, 97) = 20.58</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Note. Pre = pretreatment; post = posttreatment; MANOVA = multivariate analysis of variance; Tx = treatment; PPS = Parent Problem-Solving Scale.

* Included spanking frequency, and harsh and gentle discipline strategies. b Measures erroneously not assessed at follow-up. c Measures not conducted at follow-up because of expense.

Parent affect. Mothers in the intervention group showed a strong decrease in reported anger with a Treatment × Time interaction within the Child Anger Scale. Table 3 shows that reduced parental anger was seen in the treatment group but an actual increase was seen in the diary control group. As noted earlier, this measure was erroneously not given to the no-diary group.

Parent role. Parents in the treatment condition became better able to solve developmentally based problems, whereas mothers in the control group showed no significant change (see Table 3).

Mother role. The number of tasks during which the mothers rewarded these children increased from pre- to posttest for the treatment condition and actually decreased (albeit nonsignificantly) in the control condition (see Table 3).

Self-efficacy. Parents receiving the treatment improved more in their sense of effectiveness in parenting their children. Parents in the control conditions failed to change across time, as seen in Table 3.

Social validity. Both sets of questions designed to elicit treatment participants’ ratings of how useful program information would be for their circumstances showed that interventions were perceived by the parents as important additions to their parenting skills. Specifically, responses to the question, “How much do you feel the material [from this session] will help you to be a better parent?,” averaged across the 15 content sessions and 39 respondents (91% of the treatment sample), were distributed as follows: 77% of respondents indicated that the information from a given session “will help me a lot,” 20% endorsed “will help me somewhat,” and the remaining 3% concluded the information “will not help me at all.” In response to skill use, across the five treatment cohorts, an average of 90% of the responding participants indicated anonymously that they did intend to use each of the tools.

Longer Term Treatment Effects: 1-Year Follow-Up

An abbreviated version of our pre- and posttreatment assessments was completed 1 year following posttest for 42 of 48 participants in the treatment group, 32 of 38 diary participants in the control group, and 25 of the 42 participants in the no-diary group (the remainder were unavailable for follow-up interviews). Mean scores at follow-up are presented in Table 3. To evaluate longer term effects of the intervention, we repeated treatment outcome analyses using pretest and follow-up scores only (see Table 4 for these ANOVA's). The effect of interest was again the Treatment × Time interaction, this time examining differential change by treatment condition across the approximately 18-month period from pretest to follow-up. The Parent Role problem solving and Mother Role tasks were not given at 1-year follow-up because of the high cost of transcribing and coding.

Parenting adaptive behaviors. The multivariate Treatment × Time interaction for the dependent interview variable comprising spanking frequency and use of gentle and harsh discipline strategies showed a nonsignificant trend across this time period.

provements were seen across the year in both groups in terms of lowered mean weekly frequency of spanking and increased gentle discipline, although changes in the treatment group were larger. The treatment but not the control group showed a significant decrease in harsh discipline with time (see Table 3). Diary data were not collected during follow-up.

**Knowledge of developmentally appropriate interventions.** This construct was again represented by a single measure, the Knowledge of Parenting Questionnaire, which did not indicate a significant improvement from pretest to follow-up for the Treatment × Time interaction. The large time effect indicated a significant mean improvement across time in the treatment group only (see Table 3).

**Parenting beliefs.** Similarly, the changes in lowered developmentally specific unrealistic expectations and rigid attitudes that mothers held toward children did not maintain a significant Treatment × Time interaction at follow-up. The significant time effect indicated significant improvement in both groups across time (see Table 3).

**Parent affect.** Parents’ levels of anger toward their children continued to show a Treatment × Time interaction, with treatment parents retaining a significant decrease at follow-up over pretreatment levels (see Table 3). In contrast, the control group actually increased from pretest to follow-up in their child-directed anger. Parent role and mother role were not administered at follow-up because of cost considerations.

**Self-efficacy.** Treatment influenced the Parent Efficacy Scale, yielding a significant Time × Treatment effect from pretreatment to 1-year follow-up (see Table 3). Treated parents’ self-efficacy held a large increase from pretreatment, whereas the untreated parents’ means never rose above base-rate levels.

**Discussion**

In the weeks following preventive intervention, the high-risk mothers in the treatment group demonstrated substantial change at each of the seven domains targeted by the program shown in Figure 1. From the beginning to the end of the program, mothers reported reducing their use of spanking and other types of harsh discipline and increasing their use of gentle discipline. Their knowledge of developmentally relevant skills increased, and their unrealistic and dangerous beliefs about children decreased. Less child-directed anger was seen and mothers showed more acceptance of the role of the parent in determining answers to resource-limited problems. More nurturance characterizing the role of mother was shown by treated mothers in the observational compliance task. Finally, their sense of effectiveness as parents increased. These improvements in most aspects of the five of seven measured model attributes remained after a year (although the control group also had improved on some variables at that point). Therefore, more nurturance and their children decreased. Less child-directed anger was seen and mothers showed more acceptance of the role of the parent in determining answers to resource-limited problems. More nurturance characterizing the role of mother was shown by treated mothers in the observational compliance task. Finally, their sense of effectiveness as parents increased. These improvements in most aspects of the five of seven measured model attributes remained after a year (although the control group also had improved on some variables at that point).

In summation, the domains implicated in the past literature demonstrated long-term effects of this type of intervention. It seems logical that successfully intervening at all levels outlined in this article, each of which related to child maltreatment, will result in the prevention of maltreatment. However, because
most neglect and abuse is not reported (Daro, 1988) and a smaller proportion is substantiated, it would require an extremely large sample over a lengthy period of time to prove significant prevention of abuse and neglect.

A common criticism of studies in this area is attrition. Studies with maltreating parents who are court mandated to attend have experienced dropout rates of 20%–70% (Lundquist & Hansen, 1998). Given that the present participants were not under mandate to attend, the attrition rates were quite low for this population (three quarters of our participants completed treatment). Strategies suggested by other researchers (Budd, Stockman, & Miller, 1998), such as monetary payment and provision of transportation, childcare, and nutritious snacks for the women in the treatment group, may have assisted in reducing attrition in our study. However, the stress-filled and chaotic lives of mothers targeted for the present intervention clearly do not lend themselves easily even to a 16-week commitment.

It does seem important to note, nevertheless, that slightly more participants left the control group, which required only pre- and posttesting plus the brief daily diary, than left the treatment group. Thus, greater improvement in the treatment condition is unlikely to be the function of the most cooperative participants (perhaps with the lowest family problem or greatest motivation) remaining in the treatment but not the control group. Further, as stated earlier, this retention rate is quite good for a prevention study of this type, as judged by a recent meta-analysis (Durlak & Wells, 1998).

In addition, attrition of participants should limit the ability to find effects, and yet each of the seven aspects of the model received empirical validation. The continuing challenge to future research is to ensure that at-risk participants, a minority of whom ultimately enter the legal system for substantiated abuse and thus contact mandated assistance, receive sensitive intervention that is significant and sufficiently lasting to make a difference in long-term parenting.

This study was limited to mothers with young children in a Midwestern city and outlying towns. The extent to which it would be applicable to individuals in other environments or to those with infants or older children is unclear. Preschool-age children were targeted because basic behavioral tools begin to be useful at this stage of development, and these children have not yet developed serious behavioral disturbances. Furthermore, children at this age are at greater risk for abuse and neglect than are older children (Peterson & Brown, 1994).

Mothers in the treatment group received more monetary reimbursement ($320 more) over a 6-month period than did the control group. This was a product of our Campus Institutional Review Board for Human Participants not allowing money as an incentive but allowing payment for specific services. Although unlikely, this small amount of extra financial support may have influenced the degree of attrition (although in anonymous debriefing more women listed their relationship with the group facilitator and home visitor as more important). Finally, it is clearly the case that non-skill-building aspects of the study (such as having the support of the group and the home visitor) may have contributed to the positive results.

We found that some clinical measures commonly used to detect child abuse yielded floor effects (e.g., the Child Abuse Potential Inventory; Milner, Gold, Ayoub, & Jacowitz, 1984) and were thus insensitive to treatment effects. None of the measures of harsh discipline in the current sample demonstrated levels of abuse that would result in substantiated maltreatment in this state. However, instruments from past studies on child maltreatment (e.g., Azar et al., 1984), as well as measures devised from our laboratory were successfully used to demonstrate these effects. Replication is necessary, however, to demonstrate the clinical utility of these new measures.

Because there is a clear lack of prevention studies, particularly successful studies in the parenting area (Durlak & Wells, 1997), this study does demonstrate that it is possible to change not only parenting skills but also high-risk parents’ knowledge of developmental differences, their beliefs about punishment and rewards, their use of nurturing maternal instruction when directing their child, and their perceptions of their own parental efficacy. This is the essence of primary prevention. This study also demonstrated that these changes can occur in a relatively brief time. The use of such tools early in the parenting experience appears to offer promise for a reduction in the factors that underlie child abuse and neglect.

Further, each of the seven domains explored here has direct effects on children, whether they yield fewer cases of mandated improvement or not. For example, it has been clear for decades that harsh discipline often results in coercive and uncooperative responses from the child (Patterson, 1982), can result in generalized negative internalizing and externalizing effects (McLoyd, 1998), and can readily escalate toward abuse (Emery & Laumann-Billings, 1998). It seems clear that it is to the child’s advantage to have a parent who understands developmental levels, does not have erroneous beliefs about parenting (Azar et al., 1998), and has appropriate affect (Dix, 1991). A parent who takes responsibility for solving problems that face the child, one who gives more nurturing rewards, and one who believes that he or she can serve as an effective parent would seem logically preferable to a parent who lacks such abilities. Thus, the current findings can be argued to stand on their own as supporting a program that can definitively result in small but steady improvements in the areas that past literature have shown to be important domains of parenting in children growing up in at-risk families. Further, this study is, to our knowledge, the first clinical trial based on a dimensional model with significant effects at every level and many effects at 1-year follow-up. We view it as a first step toward creating a series of prevention studies that will not only reduce abuse and neglect but will also help restore the joy that parents expect to experience with their children.

References


Received May 10, 2000
Revision received December 13, 2001
Accepted June 18, 2002

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