

Parenting Adolescents Wisely:
The Effectiveness of an Interactive Videodisk Parent Training Program in Appalachia

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In press, Child and Family Behavior Therapy

Abstract

The purpose of this study was to investigate the effectiveness of Parenting Adolescents Wisely (PAW), a brief interactive laserdisk parent training program, in rural Appalachia. Thirty-eight mothers were assigned to either parent training via the PAW program or a no-treatment control group. Compared to the control group, the mothers who used the PAW program reported increased knowledge of adaptive parenting practices at one month follow-up, as well as, significantly lower frequency of child problem behaviors at one and four month follow-ups. No differences were found on the mothers' report of their parenting practices. These findings indicate that the PAW program may be a useful tool for instructing rural parents in adaptive parenting skills.

Large scale epidemiological studies indicate that between 12 and 22% of children and adolescents suffer from emotional, developmental, or behavioral disorders (Kazdin, 1993; Lambert et al., 1994; Rutter et al., 1976). Unfortunately, only between 10 and 20% of those children and adolescents receive necessary services (Kazdin, 1993). Many of the children -- possibly as many as two-thirds -- who are referred to mental health agencies for services receive a diagnosis of oppositional-defiant disorder, or conduct disorder (Webster-Stratton, Kolpacoff, & Hollinsworth, 1988). Treatment of child and adolescent behavioral problems, therefore, has become a priority for many mental health agencies (Dumas, 1989; Kazdin, 1988).

Furthering the emphasis on the treatment of children's behavioral problems are the costs that such disorders place upon society. It is estimated that children and adolescents commit between 20 and 30% of all crimes in the U. S. (Mulvey, Arthur, & Repucci, 1993). If children's behavioral problems could be prevented, or if the recidivism rate for juvenile offenders could be lowered, it is likely that the country could save hundreds of millions of dollars each year. Increasingly, prevention is being emphasized in federally supported research and dissemination projects.

Health insurance companies and government agencies are pressuring workers in health-related fields to create cost-effective, short-term treatments and interventions and have become reluctant to reimburse for long-term therapy (Hoyt & Austad, 1992). This has resulted in a shift from long-term psychotherapy or incarceration to community-based agencies and managed care with treatment focusing on brief behavioral interventions, validated cost-effective treatments, multidisciplinary case management, and in-home services (Broskowski, 1991).

Dumas (1989) and Forehand and Long (1988) have noted that the economic trends in the mental health field have created the opportunity for several promising interventions for children's and adolescents' behavioral problems to become more fully researched and utilized. These interventions include group therapy, social skills training, family therapy pharmacological interventions, and parent education. Of these interventions, parent education is probably the best documented cost-effective treatment for children's and adolescents' behavioral problems (Kazdin, 1987; 1988; 1993; Mulvey, Arthur, & Repucci, 1993; Webster-Stratton, 1989).

In the past 25 years, parent training has become a major influence in child therapy and child management. Traditional child therapy involves the clinician's attempting to directly effect change in a child's maladaptive behavior patterns. Parent training, on the other hand, makes use of the knowledge that behavior change is more likely to be brought about by influencing the child's environment. As the parents are the most likely agents to bring about this environmental change, the clinician imparts skills and information to the parents that help them manage and modify their child's behavior (Schaefer & Briesmeister, 1989).

While many different formats have been used to train parents, these interventions can typically be subsumed under one of two main methodological approaches: behavior modification and relationship enhancement (Schaefer & Briesmeister, 1989). Behaviorally-based approaches attempt to change the social contingencies operating in the child's social system in a way that positive, prosocial behaviors receive reinforcement and negative, deviant behaviors receive consistent punishment or, at least, no reinforcement (Dumas, 1989). These goals are accomplished by training the parent or parents to alter their own behavior and interactions with their child or children at home in such a way that

they encourage prosocial behavior and discourage deviant behavior. The relationship enhancement approach uses positive communication between the child and parents, problem-solving skills, and corrective emotional experiences to strengthen the child-parent relationship. The stronger, more open relationship is used as a vehicle for reducing the child's inappropriate behaviors (Ginsberg, 1989; Schaefer & Briesmeister, 1989).

The ultimate goal of a parent intervention is parental acquisition and use of specific skills. Acquisition of these skills is typically accomplished through modeling, didactic presentation, and shaping. Motivation to apply these skills, however, is more difficult to incorporate into a parent training model. The skills that are usually emphasized in a behaviorally-based approach are: discipline, effective communication, monitoring the child's behavior, the use of reinforcement (both tangible and social), contracting, contingency management, facilitating prosocial behavior, and anticipating new conflicts or problems (McMahon & Wells, 1989; Miller & Prinz, 1990). In a relationship enhancement approach, the skills typically taught to the parents are increased communication through the use of I statements and active listening, mutual play, and anticipation of new problem situations (Ginsberg, 1989; Schaefer, & Briesmeister, 1989).

Parent education has demonstrated efficacy in improving behavior in the home as well as the school and, as Webster-Stratton et al. found (1988), these improvements were greater than improvements due to one-on-one therapy with the parent, attention (placebo), and no-treatment control groups. Parent training has been shown to alter children's behavior such that it matches behavior of adequately functioning peers (Webster-Stratton, 1992). Furthermore, as Forehand & Long (1988) note, improvements in behavior due to parent training remain evident one year following treatment, and the benefits of treatment continue to be evident even ten years following treatment. The one disadvantage to parent

training has been that most parent training to date has been conducted with individual clients, in a face-to-face format with an individual therapist. Training sessions, therefore, have been expensive, time-limited, and inefficient at disseminating parenting knowledge (Webster-Stratton, 1984). Several new approaches to parent education may prove to be more cost-effective than individual training sessions including videotape instruction and interactive videodisk instruction. The program evaluated in this study is a behavior modification and relationship enhancement parent training intervention that utilizes interactive videodisk technology.

Interactive videodisks are instructional tools which combine the audiovisual capabilities of a videodisk (also referred to as a laserdisk) with the utility, interaction, and ease of operation of a personal computer (Schinke, Orlandi, Schilling, & Parns, 1992). The audio and video enhance the interaction available with a computer alone by allowing instruction through the use of staged simulations of possible parent-child interactions.

Interactive videodisk instruction has proven to be an extremely effective intervention for at least some purposes. In fact, in recent empirical reviews (Fletcher, 1990; Niemiec & Walberg, 1987) and one meta-analysis of empirical studies of interactive video (McNeil & Nelson, 1991), interactive videodisk instruction showed a .53 mean effect size across age groups, instructional content, and environment. McNeil and Nelson (1991) covered only studies including performance and cognitive measures for both an interactive video group and a no-treatment control group. The majority of the studies examined were from educational research; the military and private industry provided the remainder of the research studies examined.

The present study utilized interactive videodisk technology in the form of a parent training program entitled Parenting Adolescents Wisely (PAW). The program was

developed over a three-year period through the cooperation of the Department of Psychology at Ohio University and the Ohio University Instructional Media Services. The program focuses on skills training in several areas including the use of I statements, active listening, communication skills, contracting, monitoring the child's behavior, problem solving skills, assertive discipline, team parenting, positive reinforcement, speaking respectfully, and contingency management. This training occurs in the context of a family systems perspective which emphasizes the interdependency of family members' interactions and the problems caused by triangulation and scapegoating. In addition, a cognitive emphasis is achieved through discussion of family members' thoughts prior to defensive supportive interactions.

These skills are taught through a series of video clips which show families coping with nine common problem situations, such as children not doing chores properly or siblings fighting with each other. After the problems are played, the parent has an opportunity to choose one of three solutions that is most similar to the way they would handle that particular situation. A video clip of that solution is then played on the screen. Following the presentation of the solution, a printed critique of the solution appears on the screen, providing feedback to the parent on positive and negative consequences of dealing with the problem in that particular manner. If the solution that the parent chose is not the best possible solution choice, the computer will instruct the parent to choose another solution. After the correct solution is chosen, an on-screen quiz is provided to give the parent an opportunity to see how well he or she learned the techniques taught in the program thus far.

The child and adolescent problem behaviors depicted in the program, as well as, the parenting mistakes and effective parenting skills were carefully selected through a thorough

review of the empirical literature and the clinical experiences of the junior author (25 years) as a practitioner and supervisor of family therapy. Prior studies with this program have demonstrated its effectiveness with clinic-referred teens and parents (Segal, 1995) and with teen mothers (Lagges, in press). In addition, because many parents are likely to be unfamiliar with computers, PAW was designed to be user-friendly, as it teaches the parent how to use the program.

The present study examined volunteers recruited through public schools in southeastern Ohio. The purpose of this study is to assess whether the Parenting Adolescents Wisely program is effective in decreasing children's problem behaviors and increasing parental knowledge and use of appropriate and effective parenting techniques in Appalachia, an area of the country where children are likely to need interventions but not receive them for a variety of reasons including poverty, mistrust of mental health, lack of transportation, and lack of knowledge of services. PAW is designed to be utilized as a low-cost, minimal effort intervention, and as such, is ideal for use in such underprovided, impoverished areas, or in areas where access to effective parent education is unavailable or underutilized.

Method

Participants

The participants for this study were 38 Caucasian mothers of children between 12 and 18 years of age from Appalachian Southern Ohio. The participants volunteered for the program after being informed of the study through the use of letters either mailed directly to the home or sent home with children from area high and middle schools. The mothers' average age was 40, and they had some college education on average. The median level of income was between \$10,001 and \$20,000. Twenty-two of the mothers were currently

married, seven were single, and nine were divorced. Eight of the mothers were currently receiving counseling with their child or family. Twenty-one of the mothers reported significant previous computer experience, either having taken a training course in computer operation, or using a computer as part of their job. Additionally, 20 mothers reported owning a computer (see Table 1).

Only one child in the family was targeted for behavior change. In families with more than one child, the oldest child between 12 and 18 years of age was selected for the study. The average age of the children was 14, and 19 of the 38 children were male. Six of the children had been referred to juvenile court, and 14 (37%) were either currently involved or had been previously involved with child protective services.

The severity of problem behaviors in the children [as measured by the Eyberg Child Behavior Inventory (Eyberg & Ross, 1978) Total Problems score] prior to the study ranged from no problem behaviors (two mothers, one in the treatment group, one in the control group, reported no problem behaviors on the Eyberg Child Behavior Inventory) to 27 -- a clinically significant amount of problem behaviors ($M = 11.68$, $SD = 8.1$). Twenty-two (58%) participants demonstrated clinical elevations (scores of 9 or greater) on the Eyberg Child Behavior Inventory Total Problems score. After reading and signing an informed consent form, a random number generator was used to assign participants to either the experimental condition or to a no-treatment control group. All participants were paid \$20.00 upon completion of the one-month follow-up.

Measures

Eyberg Child Behavior Inventory. The Eyberg Child Behavior Inventory (ECBI, Eyberg & Ross, 1978) is a 36-item behavioral inventory designed to assess parents' perceptions of their child's behavior problems. The ECBI yields a Total Problems score

(the sum of all the items endorsed as a problem on a yes-and-no scale) and a Problem Intensity score (assessed by a 7-point rating scale of problem intensity). The ECBI has been standardized on a sample of 102 parents of children between the ages of 13 and 16; the mean Problem Intensity score is 87.5, and the mean Total Problems score is 6.0 (Eyberg, & Robinson, 1983). The ECBI demonstrates good reliability: .86 test-retest, .98 internal consistency, .59 inter-parent (Eisenstadt, McElreath, Eyberg, & McNeil, 1994; Eyberg & Ross, 1978; Robinson, Eyberg, & Ross, 1980). Boggs, Eyberg, and Reynolds (1990) report that the ECBI demonstrates high concurrent validity with the Child Behavior Checklist (Achenbach & Edelbrock, 1983). Additionally, the ECBI has been shown to be sensitive to treatment and to differentiate between clinical and normal populations (Webster-Stratton et al., 1988).

Parent Behavior Questionnaire. The Parent Behavior Questionnaire (Gordon, 1994a) contains eight items rated on a 7-point rating scale designed specifically for the PAW program. The Parent Behavior Questionnaire assesses how well parents implement parenting skills taught by the PAW program, according to their self-report. Segal (1995) reports an inter-item reliability alpha of .74.

Parenting Knowledge Test. The Parenting Knowledge Test (Gordon, 1994b) is a 34-question multiple-choice test designed specifically to measure parental knowledge of the skills taught in the PAW program. A pilot study was conducted to determine if the Parenting Knowledge Test could distinguish persons who had been taught the didactic information presented in the PAW program from individuals who had not been taught this information. Two groups of 15 undergraduates participated in the study. One group was given the PAW workbook (Gordon et al., 1994) and instructed to study it. They were then asked to complete the Parenting Knowledge Test. The second group was not given access

to the workbook, but instead completed the Parenting Knowledge Test without additional information. The workbook group scored significantly higher on the Parenting Knowledge Test than the non-workbook group, $t(47) = 3.63$, $p < .001$ (Segal, 1995). Additionally, Segal (1995) found that parents scored significantly higher on the Parenting Knowledge Test after completing the PAW program than they had at pretest.

Procedure

The mothers were assigned to groups through the use of a random number generator. Mothers who received an even number were assigned to the experimental groups, and mothers who received an odd number were assigned to the control group. The mothers assigned to the experimental group used the PAW program individually at the Ohio University Psychology Clinic.

Once the mothers had been assigned to groups, they were asked to fill out a demographic questionnaire, the Eyberg Child Behavior Inventory, the Parenting Knowledge Test, and the Parent Behavior Questionnaire. Subsequently, the mothers assigned to the experimental group received instruction in the use of the PAW program and workbook. The mothers were told that they would be asked how carefully they read the workbook at follow-up. They were then instructed to complete all nine problems in the PAW program. As the interactive video can take as long as three hours to complete, the participants in the experimental group were given the option of completing the program in one to three sessions. The median number of sessions was three, and the program was completed in two weeks, on the average.

One month after completion of the program, the mothers returned in order to complete the Eyberg Child Behavior Inventory, Parenting Knowledge Test and Parent Behavior Questionnaire as posttests. The mothers were asked in a structured interview

about how often and how carefully they had read or used their workbook. They then received \$20.00. The control group likewise returned after one month in order to complete the three posttest measures and receive \$20.00. Longer term (between three and five months, median of four months) follow-up data of the parent behavior questionnaire and the Eyberg Child Behavior Inventory were gathered by phone interview. The control group was informed that they were permitted to use the PAW program after completing the posttest measures if they so chose, although none of them elected to do this.

Intervention

The hardware for the PAW program consists of a Macintosh Power PC computer and monitor, a TV monitor, and a Pioneer Laserdisk Player.

The PAW program presents nine specific problems including children not completing chores, not completing chores satisfactorily, not complying with parental requests (both to relinquish use of the telephone and to turn the volume of music down), not completing homework, fighting with siblings, associating with other children whom the parents fear are a “bad influence,” and speaking disrespectfully. After the video presentation of each of the nine problems, the user is asked to pick one of either two or three solutions based on how they would react in the given situation. A video segment of that particular solution is then played, and the parent receives feedback in the form of an on-screen critique of the solution. If the solution chosen was not the best solution, the parent is instructed to choose another solution and cannot proceed to a new problem until the correct solution is chosen and viewed. Each solution is critiqued by the computer in a question-and-answer format which points out to the user the positive and negative aspects of that solution. Following the selection of the correct solution, a review quiz is presented to give the user a chance to practice his or her newly learned skills; the user then advances

to a new problem. The entire program is currently available on a CD-ROM used with a multimedia PC. Users of the PAW program also receive a workbook to take home which contains all of the problems and solutions as well as critiques of each solution, review questions, and detailed skill practice exercises (Gordon, Gyls, & Segal, 1996).

Results

Comparison of Demographic Variables

Chi-square analyses were performed on the categorical demographic variables: child's gender, number of parents in the child's home, income level, mother's education level, mother's marital status, mother's computer experience, whether the mother owns a computer, whether the mother or the child is currently in therapy, involvement of child protective services (CPS) or the juvenile court in the family. An alpha level of .05 was used for all statistical tests. T-tests were performed on the continuous demographic variables (child's age and mother's age). As displayed in Table 1, no significant differences were found between the experimental and control conditions.

- Insert Table 1 -

Mothers were asked how carefully the PAW workbook was read between use of the PAW program and the one month follow-up. Seven of the mothers reported low care (not at all or somewhat carefully read) in reading the workbook; seven mothers reported moderate care (moderately carefully read), and six mothers reported high care (carefully or very carefully read) in reading the workbook. In order to determine whether care in reading the PAW workbook influenced the dependent variables, an exploratory mixed 3 (care in

reading the workbook: low, moderate, high) x 2 (time: pre-intervention, post-intervention) repeated measures multivariate analysis of variance was performed on the treatment group. The workbook by time interaction was not significant, $F(8, 28) = .59$, $p = .774$, and subsequent univariate analyses revealed that mother's level of care in reading the workbook did not significantly influence scores on any of the dependent variables.

Dependent Variables (Pretest)

A multivariate analysis was performed on the three dependent measures (ECBI, Parent Behavior Questionnaire, and Parenting Knowledge Test) administered prior to intervention to determine whether the treatment and control groups differed. The main effect of treatment group was not significant, $F(4, 33) = 1.16$, $p = .35$. Additionally, none of the univariate F-tests were significant.

Repeated Measures MANOVA – Eyberg Child Behavior Inventory and Parent Behavior Questionnaire

To test the hypotheses that parents who used the PAW program reported increased knowledge of parenting skills and use of effective parenting skills in comparison to a no-treatment control group as well as the hypothesis that children of parents who use the PAW program will demonstrate fewer problem behaviors as reported by their parents in comparison to a no-treatment control group, a mixed 2 (treatment: experimental, control) x 3 (time: pre-intervention, one-month, four-months) repeated measures MANOVA was performed on the three dependent measures.

The treatment x time interaction was significant, $F(6, 31) = 4.45$, $p = .002$. Univariate analyses were examined to determine the effects of the treatment x time interaction on individual dependent variables. As demonstrated in Table 2, the univariate analyses revealed that at both one and four months, the PAW group showed significant

improvement on both the ECBI total Problems score and the ECBI Problem Intensity score in comparison to the control group. No significant differences were found for the Parent Behavior Questionnaire.

Repeated Measures ANOVA – Parenting Knowledge Test

A mixed 2 (treatment: experimental, control) x 2 (pre-intervention, one month) repeated measures ANOVA was performed on the Parenting Knowledge Test to determine whether parents who used PAW (pretest $M=24.84$, $SD=5.88$; one month $M=29.37$, $SD=5.09$) would demonstrate increased knowledge of adaptive parenting practices in comparison to a no-treatment control group (pretest $M=23.68$, $SD=5.11$; one month $M=23.16$, $SD=5.45$). The treatment x time interaction was significant, $F(1, 36) = 21.22$, $p < .001$.

- Insert Table 2 -

Effect Size Analyses

Effect sizes were computed for the significant group by month interaction, as well as the univariate F-tests of the interaction using η^2 . The effect size for all measures was .46. On the ECBI, the effect size for the Total Problems score was .35, and the effect size for the Problem Intensity score was .36. The effect size for the Parenting Knowledge Test was .37. For the Parent Behavior Questionnaire, the effect size was only .03.

Analysis of Clinical Significance

The analysis of clinically significant change was conducted using Jacobson and Traux's (1991) twofold criterion. A reliable change index was calculated for both the Eyberg Child Behavior Inventory Total Problems scores and Problem Intensity scores in

order to determine whether the degree of change from pretest to one-month and four-month follow-ups was statistically reliable. Those participants whose reliable change indices exceeded 1.96 are unlikely ($p < .05$) to have occurred due to measurement error (Jacobson & Traux, 1991).

Given that a subject demonstrated reliable change, that participant was then categorized into one of three levels of clinical significance: 1) improved, the participant demonstrated a reliable decrease in reported child problem behaviors, 2) recovered, the participant demonstrated a reliable decrease in reported child problem behaviors, and moved from a clinical pretest score, to a non-clinical follow-up score, or 3) deteriorated, the participant demonstrated a reliable increase in reported child problem behaviors. The clinical cutoff points were determined using the method outlined by Jacobson and Traux (1991).

The results of the analysis of clinical significance lend support to the previous multivariate analysis as a considerable greater percentage of mothers who used the PAW program demonstrated improvement or recovery when compared to participants in the control condition. Of the 19 participants in the PAW condition, 13 (68%) initially had clinically elevated Problem Intensity scores, and 14 (74%) had clinically elevated Total Problems scores on the Eyberg Child Behavior Inventory. Of the 13 participants with initially elevated Problem Intensity scores, seven (54%) made reliable change, and all seven were classified as recovered at both one month and four months follow-up. Of the 14 participants with initially elevated Total Problems scores, 11 (79%) demonstrated reliable change at both one month and four months follow-ups. Of these 14 cases, at one-month follow-up, five (36%) were classified as improved, and six (43%) were classified as

recovered. At four-months follow-up, four (29%) were classified as improved, and seven (50%) were classified as recovered.

Contrastingly, seven (37%) of the control participants initially had clinically elevated Problem Intensity scores, and eight (42%) had clinically elevated Total Problems scores on the Eyberg Child Behavior Inventory. Of the seven participants with initially clinically elevated Problem Intensity scores, only two (29%) showed reliable change at one-month follow-up. One (14% of the total 7) participant was classified as improved, and one (14% of the total 7) had deteriorated. At four-months follow-up, none of the seven demonstrated reliable change. None of the eight participants with initially clinically elevated Problem Intensity scores demonstrated reliable change at one-month, and at four-months, one (13% of the total 8) of the participants had deteriorated.

Discussion

The purpose of this study was to examine the effectiveness of an interactive video-based parent training program in rural Appalachia. Hupertz (1995) found that her Appalachian participants reported significantly greater problems than the national average. In fact, many of her participants' children would be considered delinquent, yet they were receiving no counseling, therapy or other social services. A one-sample t-test revealed that the pretreatment mean Eyberg Child Behavior Inventory Total Problems score and the pretreatment mean Eyberg Child Behavior Inventory Problem Intensity score were both significantly above those of the subjects used in standardizing the ECBI (see Table 3).

- Insert Table 3 -

This study replicated Hupertz's finding that many children in rural Appalachia may benefit from some form of social service or intervention. The results of this study indicate that a computer-based parent training program is an effective way to teach parents in rural Appalachia good parenting skills. The participants who used the PAW program showed significant improvement at both one and four months follow-up on both the Eyberg Child Behavior Inventory Problem Intensity score and the Eyberg Child Behavior Inventory Total Problems score, indicating that the number of problem behaviors that their children engaged in, as well as the frequency of those problem behaviors had decreased substantially one month after using the PAW program. In fact, the participants in the experimental group improved from slightly more problem behaviors (in both frequency and number of behaviors) than the control group to considerably fewer problems behaviors (see Table 2). Participants in the PAW condition also demonstrated significant improvement on the Parenting Knowledge Test one month after completing the program. This indicates that the program is successful in teaching parents how to use adaptive parenting practices.

In addition, an analysis of clinical significance revealed that the PAW program is a clinically useful tool in the reduction of adolescent problem behaviors. Thirteen of the participants in the PAW group had clinically elevated Eyberg Child Behavior Inventory Problem Intensity scores, and about half of these were classified as recovered at both one-month and four-months follow-up. Additionally, 14 of the participants in the PAW group had clinically elevated Eyberg Child Behavior Inventory Total Problems scores, at one month follow-up, about one third had improved, and an additional third had recovered. At four months follow-up, about one third had improved, and one half had recovered.

In contrast, of the control participants with clinically elevated Eyberg Child Behavior Inventory Problem Intensity scores, all but one failed to show reliable change at

one and four months, and one participant deteriorated. It thus appears that a private, video-based, interactive program can lead to substantial improvement in adolescent problem behaviors, as reported by the parent participants.

Surprisingly, neither group showed significant improvement on the Parent Behavior Questionnaire. The Parent Behavior Questionnaire attempted to measure how often the mothers used skills addressed in the PAW program when interacting with their children. One possible explanation for the failure of the Parent Behavior Questionnaire to detect differences is that it did not accurately measure the frequency of skill use. Some of the participants in the PAW show a decline in proper parenting behaviors on the Parent Behavior Questionnaire accompanied by a decrease in their child's problem behaviors (as measured by the Eyberg Child Behavior Inventory) over the one month follow-up. It is possible that the mothers did not fully understand the questions that the Parent Behavior Questionnaire poses until after they had used the PAW program. For example, a mother may have mistaken physical punishment as assertive discipline, and mistakenly indicated that she used assertive discipline almost daily with her child. After using the PAW program (at the one and four month follow-up) the mother would then report that she used assertive discipline (avoiding physical punishment) less often. While this would be reported as a decrease in assertive discipline, it may actually have been an increase. Examining individual responses indicated that the questions regarding assertive discipline, active listening, and specific commands were the most likely to demonstrate decreases at follow-up.

A second possibility is that while knowledge, as measured by the Parenting Knowledge Test, was increased, parenting behavior did not change. While it seems unlikely that child problem behaviors would decrease in the absence of parent behavior

change or any other intervention, the decrease in parent report of child problem behavior could be explained if the mother began to judge her child less critically after viewing the PAW program, or became more skilled at telling the researchers what they wanted to hear, or simply wished to avoid further intervention. A final explanation is that the Parent Behavior Questionnaire may be particularly susceptible to social desirability. The mothers, attempting to portray themselves as good parents, initially endorsed a greater frequency of adaptive parenting techniques than actually occurred, masking any actual changes in behavior.

The overall effect size for all dependent measures is .46. In order to understand the magnitude of this effect, it is necessary to consider two normal curves, one representing the PAW group, and the other representing the no-treatment control group. The means of these curves will be separated by .46 standard deviation units. Referring to a Z-table reveals that the mean of the Parenting Adolescents Wisely group falls at the 68th percentile of the control group distribution. Thus, the average mother who uses the Parenting Adolescents Wisely program is better of that 68% of mothers who do not. If Parenting Adolescents Wisely had no effect, the effect size would be zero, which would represent an area of 50% of the normal curve. Parenting Adolescents Wisely, therefore, provides an 18% advantage over no treatment.

Cohen (1977) classified effect size as small (.2), moderate (.5), and large (.8). The effect size of Parenting Adolescents Wisely, therefore is moderate. The effect size for Parenting Adolescents Wisely is slightly larger than either the effect size of .44 reported for family enrichment programs (Giblin et al., 1985) or the effect size of .328 (Cedar & Levant, 1990) reported for Parent Effectiveness Training (Gordon, 1970), but smaller than the effect size of .68 reported for psychotherapy in general (Smith & Glass, 1977).

Despite the apparent success of the PAW program in teaching parenting skills to rural, Appalachian parents, there are several shortcomings in this study. First of all, this study used only paper and pencil, mother-report measures. The strength of the design would have been increased with direct observation of the children and mothers, with structured interviews of mother's reporting a very recent behavior, or with the children's report of their own, as well as their parents', behaviors. As with any self-report measure, the accuracy of the mothers' report of their own and their children's behavior is questionable.

An additional problem with this study is that two of its measures, the Parenting Knowledge Test and the Parent Behavior Questionnaire, are unstandardized instruments designed specifically for research with the PAW program, making comparison to other parent-training programs difficult. Finally, this study only examined posttreatment data one and four months following treatment. Future studies are required to determine any long-term change in parents who utilize the PAW program. One study (Gordon & Kacir, 1988) has demonstrated significant improvements at a six month follow-up relative to a matched control group. It is possible that repeated use of the PAW program may be necessary for maximum long-term effectiveness. Webster-Stratton, Hollinsworth, and Kolpacoff (1989) examined the long-term effectiveness of three parent training programs based on videotape modeling, group discussion, or both. All three parent training programs led to clinically significant improvements after one year in child problem behaviors and parenting behaviors for approximately two thirds of the sample. These results indicate that long-term improvement is possible with a moderately long (10 hours) parent-training program.

This type of program has promise for at-risk families in rural areas, as one quarter of all Americans live in rural areas. These people are disproportionately poor,

unemployed, elderly, chronically ill, socially isolated, and at higher risk for mental illness. Many families in these areas cannot afford health insurance, and others lose their coverage when they lose employment or when employers drop health-care benefits (Human, & Wasem, 1991). Lack of health insurance, and economic deprivation make utilization of services difficult, if not impossible.

Availability of mental health providers is also a concern for rural Americans: most mental health providers are concentrated in urban areas and college towns, with few rural areas being adequately served (Murray & Keller, 1991). Accessibility of mental health services is limited by large distances individuals have to travel to obtain services, lack of public transportation, lack of mental health outreach services, and reimbursement policies and regulations (Hutner & Windle, 1991). Additionally, rural communities place a great value on self-sufficiency and self-reliance, and these values, coupled with a mistrust of outsiders and a lack of knowledge of mental health services, often prevent rural families from utilizing services (Hutner, & Windle, 1991). It is important to note that the participants in this study used the PAW program at a university psychology clinic, indicating that they were able to secure transportation and may not have been mistrusting of mental health professionals.

Parenting Adolescents Wisely can answer many of the concerns of rural Americans. First, it is a very brief intervention. Segal (1995) found that the PAW program, with an average contact time of 3 hours, produced results comparable to parent-training programs requiring between 10 and 17 contact hours. Second, as the program is implemented by a computer, not a person, the PAW program can be made available during weekend and evening hours (approximately half of the participants in the current study utilized the PAW program on the weekend or in the evening), and it can be made available in locations more

convenient to the rural population (such as county libraries, doctor's offices, and civic centers). Finally, as PAW is a non-judgmental, self-help program, instead of a social service professional, it may overcome the prejudices against mental health services. However, barriers to dissemination of the approach are parents' discomfort with computers, and the need for a shift in the thinking of service providers and parent alike, who are likely to believe that interpersonal problems can only be solved in an interpersonal context.

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Table 1
Demographic Variables by Intervention Groups

Categorical Demographic Variable	Treatment Group (n)	Control Group (n)	df	χ^2	p
<u>Child's Gender</u>					
Male	11	8	1	.947	.33
Female	8	11			
<u>Number of Parents in Home</u>					
One parent	6	9	1	.99	.32
Two parents	13	10			
<u>Income Level</u>					
\$20,000 or less	7	13	2	4.29	.12
\$20,001-\$40,000	4	1			
\$40,001 or more	8	5			
<u>Mother's Education Level</u>					
High school diploma or less	7	7	1	0.00	1.00
Some college or more	12	12			
<u>Mother's Marital Status</u>					
Married	13	9	2	3.65	.16
Single	4	3			
Divorced	2	7			
<u>Mother's Computer Experience</u>					
Low experience	9	8	1	.11	.74
High experience	10	11			
<u>Own a Computer</u>					
Yes	9	11	1	.42	.52
No	10	8			
<u>Currently in Therapy</u>					
Yes	5	3	1	.63	.43
No	14	16			

<u>CPS Involvement</u>							
Now or in the past	8		6		1	.45	.50
Never	11		13				
<u>Referred to Juvenile Court</u>							
Yes	3		3		1	0.00	1.00
No	16		16				
Continuous Demographic Variable	Treatment Group		Control Group		<u>df</u>	<u>t</u>	<u>p</u>
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>			
<u>Child's Age</u>	14.95	1.51	13.89	2.13	36	1.76	.09
<u>Mother's Age</u>	39.05	3.32	40.68	6.62	36	-.96	.34

Table 2

Descriptive Statistics and Univariate F-tests of the Significant Time x TreatmentInteraction for the Dependent Measures

Dependent Measure	Treatment Group (M)	Treatment Group (SD)	Control Group (M)	Control Group (SD)	F	p
<u>Eyberg Total</u>						
<u>Problems</u>						
Pretest	13.84	7.31	9.16	8.73		
One Month Follow-Up	7.11	5.29	9.11	8.18	19.67*	.00**
Four Month Follow-Up	5.79	5.85	9.53	8.49	14.66*	.00**
<u>Eyberg Problem</u>						
<u>Intensity</u>						
Pretest	116.84	25.21	100.58	47.63		
One Month Follow-Up	89.05	26.21	102.79	46.23	20.27*	.00**
Four Month Follow-Up	84.95	26.89	108.79	43.79	15.35*	.00**
<u>Parent Behavior</u>						
<u>Questionnaire</u>						
Pretest	29.05	6.55	30.63	6.83		
One Month Follow-Up	32.21	5.44	31.37	8.55	.96*	.34
Four Month Follow-Up	32.42	6.55	31.42	6.94	.4*	.53
<u>Parenting Knowledge</u>						
<u>Test</u>						
Pretest	24.84	5.88	23.68	5.11		
One Month Follow-Up	29.37	5.09	23.16	5.45	21.22*	.00**

*df source=1, df error=36

**p < .001

Table 3

Comparison of Rural and Standardization Group Scores on the Eyberg Child Behavior Inventory

Measure	Standardization Group <u>M</u>	Current Study <u>M</u>	<u>df</u>	<u>t</u>	<u>p</u>
Total Problems Score	6.0	11.5	37	4.09	.00* *
Problem Intensity Score	87.5	108.71	37	3.4	.00*

* $p < .01$ ** $p < .001$