Parent Training Via CD-ROM: Using Technology to Disseminate Effective Prevention Practices[1]

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Abstract

.   Family-based prevention programs have demonstrated effectiveness in reducing risk factors for substance abuse. The lack of efficient methods for training staff and insuring treatment integrity
 and the limited time that program progenitors have for dissemination impede the spread of these programs. Additionally, there are barriers to families who use these programs such as stigma associated with a parent education or mental health approach, transportation and access difficulties, and inability to commit to months of treatment sessions. New developments in technology can surmount most of these barriers. The author describes a video-based interactive CD-ROM for training parents and families in child management and relationship enhancement skills. The program's development was based on two premises which are well-supported in the literature. One premise is that interactive videodisk programs increase knowledge and performance more efficiently than do standard methods of instruction. The other is that videotaped modeling of parenting skills is as effective in producing improvements in child behavior as are parent education discussion groups and parent training with a therapist.

        The CD-ROM program is self-administered, highly interactive, and brief, requiring no trained staff for its delivery. Users receives feedback about their choices from the computer, not a person, thus minimizing defensiveness. Controlled evaluations show improvements in knowledge and parenting skills, and reductions in child behavior problems. Many teens moved from the clinical range of behavior problems to the normal range after their mothers used the program. Replication efforts by service providers and universities are underway due to the program's ease of implementation and evaluation. Gaps in knowledge about this approach include general long-term effects, and, more specifically, how the program will affect ethnically diverse populations, how repetition and use by other family members affects outcomes, and how to overcome mental health professionals' resistance to the technology. Prevention practice can be improved with this approach since it can be disseminated relatively quickly and inexpensively, with very high treatment integrity.   The convenience and lack of stigma can increase participation by parents prior to their becoming distressed by their children's behavior problems. Existing programs can incorporate and evaluate CD-ROM parent training, while new efforts will be encouraged by such an inexpensive program. Program changes, based upon research feedback, can be incorporated rapidly without the difficulty of retraining program staff.

Key words: parent training, family interventions, CD-ROM technology, parental resistance, dissemination, treatment barriers, multimedia

The purpose of this paper is to describe how technology can reduce barriers to dissemination and use of parent and family interventions. This technology consists of highly interactive, video-based CD-ROMs and interactive video-disk programming. I begin the paper by presenting the scientific basis for family-based prevention programs, briefly review some effective programs, then describe barriers to their dissemination. I then describe, beginning with the literature on interactive videodisk instruction, the development and research on a parent training CD-ROM, which integrates interactive videodisk methodology with videotaped modeling of parenting skills. I discuss barriers to the technology's dissemination, particularly among mental health professionals, then list gaps in our research knowledge on this technology. Finally, I present steps for overcoming barriers to widespread dissemination.

Family-related Risk Factors

According to Stewart and Brown (1993), family functioning plays a role not only in the teen's initiation of drug use, but also in its maintenance. Numerous family factors are related to the risk of adolescent substance use. The strongest predictor of adolescent use is parental substance use (Alexander & Gwyther, 1995; Malkus, 1994; Swaim, 1991; Hundleby & Mercer, 1987; Brook, Whiteman, Gordon, Nomura, & Brook, 1986; Semlitz & Gold, 1986). When the parent is under the influence of drugs or alcohol, parenting is more likely to be inconsistent (Kumpfer & DeMarsh, 1986) and monitoring of the adolescent tends to be low (Dishion, Reid, & Patterson, 1988; Swaim, 1991). In turn, low parental monitoring increases the risk of substance use because the adolescent may have more opportunities to get involved with drugs and with peers who use drugs (Dishion et al., 1988). Other investigators have found that similar parenting or family management practices (for example, inconsistent parenting practices, poor monitoring, inconsistent punishment, etc.) are strong risk factors for teen substance use (Catalano, Haggerty, Gainey, & Hoppe, 1997; St. Pierre & Kaltreider, 1997; Swaim, 1991; Kumpfer & DeMarsh, 1986).

Additional family risk factors include family conflict, conflict with parents (Catalano et al., 1997; Swadi, 1991; Swaim, 1991), parental attitudes favoring substance use (Catalano et al., 1997; St. Pierre & Kaltreidner, 1997; Johnson & Pandina, 1991), lack of parental support (Stewart & Brown, 1993; Hundleby & Mercer, 1987), hostility and lack of warmth (Johnson & Pandina, 1991), and poor bonding between child and parent (St. Pierre & Kaltreider, 1992; Santisteban Coatsworth, Perez-Vidal, Mitrani, Jean-Gilles, & Szapocznik, 1997). Factors such as low parental involvement with children (St. Pierre & Kaltreider, 1992), poor family communication (Glynn & Haenlein, 1988; Kumpfer & DeMarsh, 1986), and low family cohesion/attachment (Kumpfer & DeMarsh, 1986; McKay, Murphy, Rivinus, & Maisto, 1991; Malkus, 1994) are also related to adolescent substance use. McKay et al. (1991) found that higher levels of family dysfunction are associated with higher levels of adolescent substance abuse.

Brown, Mounts, Lamborn, and Steinberg (1993) pointed out that parents have an indirect influence on the peer group with which their adolescents become affiliated. Parent behaviors impact adolescent characteristics, an influence that predicts the type of peer group with which their child associates. If the parent-child relationship is poor, the child is more likely to become involved with deviant peers and consequently to become involved in drug and alcohol use or delinquency (Brown et al., 1993; Patterson, 1986).

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<u>Family-Based Prevention Programs</u>

      Several studies have illustrated the effectiveness of parenting skills training in reducing such risk factors for substance use as low parental monitoring, family conflict, and child problem behaviors. These parenting programs also strengthen protective factors, such as family cohesion and functioning, positive family communication, and consistent parenting practices. Piercy, Volk, Trepper, Sprenkle, & Lewis (1990, as cited in Malkus, 1994) emphasize the need for programs that improve the quality of the affective level of the parent-child relationship. According to Kumpfer and DeMarsh (1986), effective prevention programs will improve social skills, teach family management skills, increase the time parents spend with children, decrease family conflict, and provide positive role models for children.

<u>Family therapy</u>. Several models of family therapy have reduced risk factors for and/or levels of adolescent substance abuse. These include Functional Family Therapy, Multisystemic Family Therapy, Brief Structural/Strategic Family Therapy, Multidimensional Family Therapy, and Purdue Brief Family Therapy. These are labor intensive interventions which require advanced training and have been reviewed in CSAP's Family and Parent Centered Interventions (Grover,1998); they will not be reviewed here. Family therapy can be successful at engaging and retaining high risk families (Santisteban et al., 1997), particularly when done in the home (Gordon, Jurkovic, & Arbuthnot, 1998). For many families not at the highest risk levels, more cost-effective parent education approaches produce outcomes comparable to family therapy (Friedman, 1989).

<u>Parent training</u>. A well-established family-based approach is parent training, which has been found to decrease family-related risk factors, enhance family-related protective factors, and decrease problem behaviors in children (Catalano et al., 1997). By using more appropriate social skills, teaching these skills to other family members, and strengthening the family in general, parents reduce the risk that their children will experiment with substance use and associate with antisocial peers (Grover, 1998). Approaches to parent skills training typically provide the parent with practice of the newly learned skills as well as feedback on his or her performance. Several parent training programs will be reviewed in the following section.

      The Strengthening Families Program (SFP) is a prevention program consisting of three components: parent training, children's skills training, and family skills training (Kumpfer, Molgaard, & Spoth, 1996). The parent training component consists of 14 one-hour sessions that teach parents to increase desired behaviors in their children through use of attention, reinforcement, charts, communication training, limit setting, etc. Drug education relating to drugs that adolescents use is also included in the parent component. The children's skills component trains children in understanding and sharing feelings and in attending, communicating, problem solving, increasing good behavior, complying with parental rules, dealing with criticism, and handling anger. Children also engage in a discussion session about alcohol and drugs. The family skills component provides additional information about family meetings, as well as a time for the families to practice newly acquired skills while engaging in the Child's Game, a structured play therapy session.

      The first study conducted on SFP involved children (ages 6-12) of methadone maintenance parents and substance-abusing outpatients from local mental health centers (DeMarsh & Kumpfer, 1986, as cited in Kumpfer et al., 1996). Subjects were divided into three groups. Group 1 received only the parent component of the program. Group 2

received both the parent and child components. Group 3 received all three components. Treatment subjects were compared to a matched group of children of non-substance abusers. Outcome studies suggested that subjects in Group 3 (SFP content) showed the most success. SFP improved the child's risk status in three areas: 1) children's problem behaviors, emotional status, and prosocial skills, 2) parent's parenting skills, and 3) family environment and family functioning. Older children (treatment subjects) decreased their use of alcohol and tobacco. Parents reduced their drug use and improved their parenting skills.

In a later study, Aktan, Kumpfer, and Turner (as cited in Kumpfer et al., 1996) investigated the effectiveness of SFP on 88 African American, inner city, substance abusing parents. In families of low drug-using parents, family cohesion increased, family conflict decreased, and the families reported spending more time together. In children of high drug-using parents, parents reported that children's internalizing and externalizing problem behaviors decreased to levels similar to those of children of low drug-using parents) immediately after the 12 weekly sessions. Kumpfer et al. (1996) concluded that the SFP does more than merely improve parenting skills. It also decreases children's risk for substance abuse by improving the family environment, strengthening bonds with the school, and decreasing depression and delinquency.

Preparing for the Drug Free Years (Spoth & Redmund, 1993) is a parent skills training program based on Hawkins and Catalano's (1992) social development model. The goal of the program is to increase parenting skills so that parents are able to increase family bonding and reduce family risks for substance use. The program consists of five two-hour sessions. One of these sessions requires the adolescent's attendance. Parents are taught to recognize substance use risk factors and to utilize family management skills for expressing and controlling anger (Spoth & Redmond, 1993). Spoth, Redmond, Haggerty, and Ward (1995) found that randomly assigned parents who completed the treatment group (n=85) provided reinforcement to their children more often, monitored their children more frequently, and reported being more involved with their children than did control group parents (n=90). Treatment parents also reported better parent-child relationships and communication and fewer negative interactions with their children than did control parents immediately after the intervention.   These studies have made extraordinary efforts to engage parents and reduce attrition once the intervention started. Higher risk families usually do not initiate or continue participation in parenting programs.

Felner, Brand, Munhall, Counter, Millman, & Fried (1994) evaluated a worksite-based parenting program (n=191) intended to improve the quality of parent-child interactions by increasing parenting skills. A second goal was to decrease risk factors for adolescent substance abuse while at the same time increasing protective factors. The interventions, which were scheduled twice a week, consisted of 24 one-hour sessions. The program sought to reduce parental stress by increasing the parent's support network. Data were collected at baseline, post-treatment, and at 9-, 18-, and 30-month follow-up. Parents who attended at least 80% of the sessions reported a decrease in both child behavior problems and in stress and depression, as well as an increase in positive parenting practice and knowledge of parenting skills.   Interestingly, parents reporting higher levels of social isolation and child behavior problems attended a greater number of sessions.   There was no control group.

Webster-Stratton (1990) evaluated the effectiveness of a self-help videotaped parent training program. Mothers of 43 three- to eight-year old conduct-disordered children were randomly assigned to one of three groups: videotape with therapist consultation, videotape without therapist consultation, or a wait control. The videotaped program, shown over

the course of 10 weeks, sought to improve the mothers' parenting skills and parent-child communication (mean age of child = 5.1 years). Mothers in both treatment groups (there were no differences between treatment groups) reported fewer child problem behaviors, fewer spankings, and less stress than did mothers in the control group at a one-month follow-up. Treatment mothers also showed more positive affect towards their children. As observed during home visits, mothers in the therapist consultation treatment group reported fewer problem behaviors and praised their children more frequently than did either of the other two groups. Webster-Stratton (1992) also found that a videotaped intervention with parents moved the behavior of their conduct-disordered children from the clinical to the normal range, compared to a wait list control group, n=100, random assignment to groups. O'Dell, Krug, Patterson, & Faustman (1980), O'Dell, O'Quinn, Aford, O'Briant, Brad, & Giebenhain (1982), Nay, 1976, and Flanagan, Adams, and Forehand (1979) have also found improvements in child problem behavior using videotaped modeling for parents. Videotaped modeling was superior to written instructions, lectures, live modeling, and role play, These studies, though few in number, illustrate the effectiveness of self-administered videotaped parent training. The strength of their conclusions is bolstered by the fact that the studies were conducted in four different university settings.

The Coping Power Program (Lochman & Wells, 1996) uses separate parent and child training over 15 months and targets aggressive children during the transition to middle school. Reductions in children's aggressive behavior and parents' physical punishment preceded reductions in substance abuse a year later. The authors found some indications that parenting changes had a preventive effect on early-onset substance use.

When parents meet with a therapist, as in family therapy or parent training, resistance to learning new skills is usually present and may be a function of the therapeutic relationship. Patterson and Chamberlain (1994) found that when therapists increase their efforts to intervene by teaching new skills, resistance increases. The particular therapist behaviors such as "confront" (telling parents directly what they are doing wrong) and "teach" (telling parents what they need to try to improve their parenting) are causally related to greater parental resistance (Patterson & Forgatch, 1985). In order to prevent premature termination, therapists must facilitate and support, effectively retreating from teaching new skills. The relatively high number of sessions necessary to show positive effects may reflect this apparent paradox.

Conclusions from prevention literature. Evidence reported to date confirms that it is possible to change risk factors for adolescent substance abuse with prevention programs. Successful school-based prevention programs typically include a normative education program. Other promising approaches consist of a parent education or parenting skills component. Many of these programs, while effective, are time consuming and costly. With recent cutbacks to social service programs, it is prudent to investigate shorter term, less intensive prevention programs that can still produce favorable results while minimizing cost. Such programs could be stacked concurrently or offered sequentially to compound their modest benefits. By reducing the length of time that parents need to commit to one program, it is likely that more parents will be willing to participate in substance use and delinquency prevention programs. The brevity of interventions could allow more families access to such programs. Prior use of parenting resources predicts future use of those services (Spoth & Redmond, 1995), so enticing parents with a brief intervention may hook them into more extended training. The power of having parents view videotapes of parenting skills, which is a brief and self-administered intervention, is striking and usually equal in effectiveness to interventions where therapists or parent educators spend more time with parents.

Barriers to access to effective programs. A number of serious obstacles prevent the widespread dissemination of traditional services to families at risk for substance abuse, delinquency, and other problems. For family therapy, parent education, and parent training programs, attrition is often high, especially for the first appointment. When teens are involved, the families with the most difficulties cannot get their teens or their children to the sessions.   Barriers such as transportation, costs of treatment, arranging child care, and scheduling around therapists' availability prevent many parents from completing treatment (Webster-Stratton, 1984, Kacir, Gordon, & Kirby, 1999). Another barrier to delivering parent training and parent education has been that most parent training to date has been conducted either in a one-person, face-to-face format with an individual therapist or in a group setting requiring 10 to 12 weeks. Low-income parents may be particularly sensitive to the stigma of seeing mental health professionals, and many will not seek treatment unless desperate. For primary or secondary prevention, since parents are unlikely to be very motivated to be proactive if their children's behavior problems are not fairly distressing, moderately lengthy programs (4-10 sessions) fail to attract many parents. Another obstacle is that parent education groups and parent training are not offered continuously and thus serve relatively few parents in a community. There is a need for innovative interventions that do not utilize agency manpower resources, can be offered continuously, and—most important-- have undergone careful evaluation. The robust treatment effects for parenting programs which are self-administered videotapes in the work of Webster-Stratton (moderate to large effect sizes), O'Dell, Ney, and Forehand mentioned above is one solution which has not been used widely.

Another set of barriers, which, I submit, are quite serious, to disseminating effective programs pertains to training service providers. First, we must maintain the therapeutic integrity of the intervention, a task which requires considerable effort and expense. The program's progenitors and experienced associates must be involved in quality control of the training and ongoing supervision of the service providers. If trainees are experienced, it is challenging to persuade them to change their customary practices, as service providers often resist attempts to limit their autonomy. Second, accurate, objective mechanisms to monitor how providers behave are not usually in place, and the consequences for provider change and maintenance of change are inadequate. Bickman & Noser (1999) express concern about therapists' likelihood of following a defined treatment protocol if ongoing close supervision and consequences are not in place. Because they conclude that there is insufficient scientific evidence that treatment for children and adolescents is effective (as it is delivered in community, as opposed to research, settings), we need to implement continuous quality improvement systems to give service providers feedback about their procedures and outcomes. This has been a very difficult challenge because, as Chambless (1999) notes in her discussion of the problems with disseminating empirically validated treatments, practicing clinicians are hampered by time, distance, and money in getting supervised training. Third, it is challenging to recruit and retain providers with those personal attributes and skills necessary to benefit from training (attributes similar to those of highly selected and trained graduate students in clinical psychology, such as receptivity to new methods). Fourth, the anti-empirical bias of those with personal experience (called the common sense revolution by Paul Gendreau) causes administrators, policy makers, politicians, and service providers to discount or ignore empirically-based treatments. Such thinking is exemplified by the assumption that "if I know something about this topic, and the current practice makes sense to me, there is no need to look for corroborating evidence or to evaluate the current practice." Fifth, empirically validated programs are generally poorly packaged and marketed, yet they compete

with ineffective or unevaluated programs that are well-packaged and marketed (i.e., DARE, Active Parenting). Finally, service providers often are not trained to evaluate research findings. They have limited access to research and don't subscribe to research journals and they have little time to go to libraries to read the journals. Applied journals which they do read are not research-oriented and they emphasize case studies. Because their access to published research is so limited, they tend to trust the opinions of their peers. Some cause for optimism is the publicizing of evidence-based programs through SAMSHA websites (strengtheningfamilies.org) and the APA's Division 12 (clinical psychology) Task Force on Intervention's website, which lists manuals and training in empirically validated treatments (www.sscp.psych.ndsu.nodak.edu).

Technological Approaches

New opportunities are available today to intervene with parents and families. Given what we know about how people learn and recall new information, the application of this knowledge to the development of interactive CD-ROMs and videodisks has advanced our ability to intervene effectively and efficiently for a variety of problems. Interactive videodisk technology (the parent technology of new interactive CD-ROMs) has been used to provide training to adults in a variety of settings. For example, professionals have taken advantage of interactive training in lieu of attendance at off-site workshops. Interactive videodisk instruction has been provided to professionals for a variety of topics, including emergency medical procedures (Lambert & Sallis, 1987), sales techniques (Goldman, 1988), corporate decision-making processes (Byers & Rhodes, 1989), and divorce mediation training (Gentry, 1992).

In a meta-analysis of 100 studies, McNeil and Nelson (1991) found substantial effects of interactive videodisk instruction on cognitive and performance measures, with a .53 mean effect size across age groups (college students, military personnel, sales people), instructional content, and environment. These studies were conducted in military, industrial, and higher educational settings, and they have shown that interactive videodisk instruction reduces instruction cost and time (Bosco, 1986; Cohen, 1984; Fletcher, 1990). In addition, this form of instruction has been shown to lead to greater practice time than did other methods; users find the experience very enjoyable. Interactive videodisk instruction has been found to be more effective than traditional lectures, reading, and passive viewing of videotapes; and it produces greater effect sizes than does computer-based instruction (.69 vs. .26) (Fletcher, 1990; Niemiec & Walberg, 1987).

Although the effects of this technology are consistently impressive, it has not been widely adopted outside of private industry. The use of interactive videodisks has been hampered by hardware complexity and costs, since not only a personal computer with monitor, but also a laserdisk player and television monitor are needed. For example, the author used this system when he first implemented the prototype of the parenting CD-ROM. Social service agencies had great difficulty reconnecting the equipment correctly if they moved it, requiring frequent technical support from project staff. None of the agencies was interested in purchasing the program in spite of strong evidence of effectiveness.

Parent Training CD-ROM: Goals, Development, Content, and Evidence

Goals. Seven years ago, the author identified challenges in developing an interactive video program for parents and families. It must be interesting and non-threatening to parents, be developed with empirically validated content and teaching methods, be applied in a standardized way in a variety of locations, be self-administered, be capable of widespread dissemination, and be affordable to agencies serving families. In order to facilitate dissemination, the

program must be capable of being integrated into existing services with no more than minimal staff training in either program delivery or operation. Since the highest risk families are usually poor, sensitive to implied blame, and difficult to engage, the program had to be brief, easy to operate for those unfamiliar with computers, private, self-paced, highly engaging, and must meet their own perceived needs.

    <u>Development and Content</u>. The author gathered a team of professionals in child and family psychology, film, telecommunications, software development, and multimedia productions to plan and create an interactive videodisk program which would train parents to improve their parenting skills.
Research on the impact of videotaped modeling in teaching parenting skills (i.e., Webster-Stratton's work) strongly encouraged the team to adopt a video-based approach.

    Parenting Wisely (PW) is a brief (approximately three hours), CD-ROM based intervention which requires minimal agency resources to operate. All that is needed is a support person to turn on the computer and spend a few minutes teaching the parent how to use a mouse, as pointing and clicking are the only skills needed to operate the program. The program itself teaches the parent how to use it. In order to facilitate its adoption, the ease of agency implementation and parental use was a primary goal for the program's design.

    The PW program teaches adaptive parenting skills in the form of using "I" statements, active listening, contracting, monitoring children's behavior, problem solving, assertive discipline, parenting as a team, positive reinforcement, speaking respectfully, and contingency management. The program was developed from both cognitive-behavioral and family systems models. As such, it emphasizes that family members' actions are interdependent, and that the thoughts that family members were experiencing with one another prior to interactions with one another are important. The functional family therapy model of James Alexander (Alexander & Parsons, 1982; Alexander, Pugh, & Parsons, 1998) served as the foundation to the theoretical and functional approach taken in the PW program. I have been teaching this model to graduate students working with families of delinquents for almost two decades, and the strong treatment effects from research conducted on this approach at Ohio University (Gordon, Jurkovic, and Arbuthnot, 1998) convinced me to incorporate essential features of this approach into the CD-ROM.

     Parenting skills are presented in a series of videotaped segments showing families attempting to deal with problems, such as children not doing homework or not obeying parental requests, presented in nine case studies. After a case study is presented, the parent is instructed to choose one of three solutions, that is most similar to the way he or she would handle that situation. A videotaped portrayal of that solution is then displayed on the computer screen. The program then critiques the chosen solution, providing feedback to the parent on both the positive and negative consequences of dealing with the problem in the chosen manner. If the parent chose a solution that was not particularly effective, the computer instructs the parent to choose another solution. Once the most effective solution is selected, an on-screen quiz with feedback provides the parent with an opportunity to see how well he or she learned the techniques taught in the program.

    The skills 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. In a relationship enhancement approach, the skills typically taught to the parents are mutual play, anticipation of new problem situations, and increased

communication through the use of "I" statements and active listening, (Ginsberg, 1989; Schaefer & Briesmeister, 1989). The choice of skills to be taught in the PW program was based on those associated with positive outcomes in the literature on parent- and family-centered interventions (Gordon, Jurkovic, & Arbuthnot, 1998; Grover, 1998). The author's 25 years of experience working with families and supervising graduate students working with families of delinquents also informed the choices of representative problems and effective solutions. For example, the problem of homework noncompliance was chosen because of the high frequency of this problem in families of delinquents. After parents were taught the skills of parental monitoring and parent-teacher communication, academic problems declined.

Evidence. Research conducted on this program has shown PW to be effective at reducing problem behaviors in children, improving family functioning, reducing maternal depression, increasing parenting knowledge, and increasing the use of effective parenting skills (Segal, Gordon, Chen, Kacir, & Gylys, 1999; Kacir & Gordon, in press; Lagges & Gordon, 1999; Woodruff & Gordon, 2000). In a study using participants referred from outpatient clinics and a residential treatment center for juvenile delinquents, Segal et al. (1999) found significant decreases in the number and intensity of child problem behaviors. Parents also reported an increased use of effective parenting skills and showed greater knowledge of parenting skills taught in the program.

Using randomly assigned control and treatment groups, Kacir and Gordon (in press) investigated the effectiveness of the PW program with parents of 38 adolescents recruited through local public schools. At a one-month follow-up, parents in the treatment group demonstrated significantly greater knowledge of parenting skills than did parents in the control group. At one- and four-month follow-ups, parents in the treatment group also reported greater decreases, from 14 to 6, than control subjects in the number and intensity of child problem behaviors on the Eyberg Child Behavior Inventory (ECBI, Eyberg & Ross, 1978). Most teens in the treatment group showed clinically elevated scores on the ECBI prior to their mothers using the program. Four months after program use, 50% of the teens were classified as recovered on the ECBI (scoring in the normal range). Average effect sizes for all measures were .46. (See Figure 1)

INSERT FIGURE 1 HERE

While prior research focused on individual administration of the program to parents of adolescents, Lagges and Gordon (1999) investigated the effectiveness of using the PW program with 64 teenage mothers whose children were infants and toddlers. Compared to control subjects, teenage mothers in the treatment group demonstrated greater increases in their knowledge of adaptive parenting skills at a two-month follow-up. Mothers in the treatment group were also more likely than were control subjects to endorse the effectiveness of adaptive parenting practices over coercive practices at follow-up. This study demonstrates the flexibility of the PW program and its potential for use in a variety of contexts. Teachers of high school students in health and home economics classes have their students "fly the parent simulator" when they use the PW program, in an effort to train them before they become parents.

Gordon and Kacir (1998) examined the effectiveness of the PW program when used with 60 court-referred parents of juvenile delinquents. These parents were often resistant to treatment, unmotivated, and had repeatedly demonstrated poor parenting practices in the past. Nevertheless, these parents also showed improvement, in comparison to a no-treatment control group, on both the ECBI Total Problems scale (Eyberg & Ross, 1978) and on a parenting knowledge test. These improvements were demonstrated at three- and six-months post-treatment. (See Figure 2). Additionally, the children of parents who used the PW program showed decreases in negative behaviors as reported on

the Parent Daily Report (Chamberlain & Reid, 1987) collected one week, one month, three months, and six months following treatment. Effect sizes ranged from .49 to .76, indicating a robust treatment effect. A control group matched on juvenile court involvement, but not on pretest level of behavior problems, did not show changes in either measure of child problem behavior.

INSERT FIGURE 2 HERE

A recent study of PW as a strategy for family intervention has found that family functioning, as measured by the Family Assessment Device (Epstein, Baldwin, & Bishop, 1983; Miller, Epstein, Bishop, & Keitner, 1985), improved two months after parents and children used the program (Woodruff & Gordon, 2000). High risk, disadvantaged families with a fourth- to sixth-grade student were randomly assigned to receive in their homes either the PW program (on a laptop computer) or parent education booklets (Principles of Parenting) covering similar content.   The PW group showed greater reductions in child problem behavior (on the ECBI), as well as improvement in such aspects of   family functioning as role expectations and problem solving. Both interventions produced reductions in maternal depression. These parents earlier had refused to participate in the same study offered at their children's school, in spite of offers to provide transportation, child care, cash payments, and food. A six-month follow-up showed that child behavior problems continued to be reduced. Clinically significant behavior change occurred for 42 % of the PW group, and for 27 % of the comparison group. A comparison of studies conducted on PW is presented in Table 1.

INSERT TABLE 1 HERE

In all the studies conducted on PW, parents who used the program reported overall satisfaction and found the teaching format easy to follow. They also found the scenarios realistic, the problems depicted to be relevant to their families, and the parenting skills taught reasonable solutions to those problems. The parents felt confident they could apply the skills in their families. These findings may help explain why parents were willing to spend two to three hours in one sitting using the program, and why improvements in child behavior were evident a week after parents used the program.

The size of the treatment effect is highly unusual, given the very brief duration of the treatment. Although effect sizes for other studies using interactive video were also moderately large (McNeil & Nelson, 1991, Niemiec & Walberg, 1987), high risk families have not, until now, been exposed to this technology, nor has CD-ROM or interactive video been applied to parenting and family living skills. These moderately large treatment effects are probably due to a combination of at least three factors: videotaped modeling of excellent and highly relevant content, a very high level of required user interaction, and the private, self-paced, and nonjudgmental format of a computer. Such characteristics should be appealing for primary prevention, where parents are more sensitive to barriers such as inconvenience, stigma, and defensiveness, compared to secondary or tertiary prevention where parents are more motivated to get help for chronic child problem behavior. Table 1 lists important differences between traditional therapy and CD-ROM approaches, which may explain these treatment effects.

INSERT TABLE 2 HERE

Adolescent problem behaviors and poor family functioning are two main risk factors associated with adolescent substance use (Santisteban et al., 1997). It appears that the PW program is effective in reducing these risk factors. The Kacir and Gordon (in press), Gordon and Kacir (1998) and Segal et al. (1999) studies showed that child problem

behaviors decreased while parent knowledge of parenting skills increased. Woodruff & Gordon (2000) found improvements in family functioning as well as reductions in child problem behaviors.

Barriers to Dissemination of CD-ROM Technology

Despite the value of using interactive CD-ROMs for parenting instruction, utilizing modern technology can be daunting for professionals and paraprofessionals. Many barriers block the path of even the most vigilant technology supporter (e.g., the lack of available equipment and funding to purchase, update, and maintain equipment; of technological expertise; and of training on how to implement and use technology within specific fields). However, the use of technology among mental health providers is particularly challenging as the mental health profession holds many views about the nature of change which need to be altered for successful implementation of technological resources.

Many therapists received training influenced by the medical model, which focuses on individual psychopathology.   Such professionals believe: 1) that psychological services need to be provided in a face-to-face, often one-on-one, presentation in order to be effective; 2) that change can only occur within a confidential, self-disclosing relationship; 3) that services need to be provided by a human being, who can mold the intervention to the individual client; and 4) that meaningful change takes a long time (Kacir et al., 1999). In addition, many therapists are unaware of the literature on the effects of videotaped modeling and interactive videodisk instruction. Thus, they may be skeptical that a computer or videodisk can produce meaningful change in a short period of time. Other professions, however, are more open to this notion. Family life educators are increasingly using technology to reach clients through videos, satellite downlinks, e-mail, the Internet, and interactive CD-ROMs. Judges and children's services personnel have also begun to recognize the ability of technology to reach more families, more often, with less expenditures of time, money, and personnel (Gordon & Kacir, 1998).

 Therapists are not the only barriers to implementing technological services. Parents also need to change hard-held opinions. Despite the growth in computer access at work, in local libraries, and in homes, many parents remain computer illiterate. This ignorance of how technology works can lead to fear of the technology itself. In addition to this fear and distrust, many parents do not see the connection between parenting and their children's problem behaviors and thus are resistant to parent training. In fact, many will not attend parent training classes unless mandated by a judge. In a national survey of education programs for divorcing parents, attendance at mandatory classes averaged 110 parents per month while voluntary attendance averaged about 20 parents monthly (Geasler & Blaisure, 1998). Court mandated programs have produced positive outcomes, such as improved parental communication and reductions in parental conflict and relitigation (Arbuthnot & Gordon, 1996; Kramer, Arbuthnot, & Gordon, 1998). Therefore, parents whose children are identified by juvenile courts, schools, and child protective services as being at risk for continued problems should be coerced or enticed to attend effective programs.

 If parents do attend training, they often are not given the opportunity to actively participate. Only 35% of the programs in Geasler and Blaisure's study (1998) reported using active participant involvement such as role play or skill building activities despite the evidence that this teaching strategy yields the best outcomes. Parent education for divorcing parents has enjoyed explosive growth, but the growing numbers of court-mandated parents attending these classes has led to larger classes and reduced interaction (Arbuthnot & Gordon, 1996).

Many parents feel uncomfortable in groups or asking their specific questions in front of strangers for fear of being judged, so they prefer small groups or individual parent training. Oftentimes, parenting classes are so short that they only offer vague content, and parents do not have their specific problems addressed or do not receive the skill building practice that change requires. In our experience, most parents who expressed a willingness to receive parent education failed to appear for the first session if they were assigned to a group rather than to an individual session. However, those who did attend the first group continued for all three sessions (Ponferrada, Lobo, & Gordon, 2000). Thus, some parents who are contemplating parent education may be more likely to use a CD-ROM program individually than attend group sessions. Perhaps the pro-active parents seeking parent education prior to their children developing problems will be open to a private CD-ROM program; and, if that is a successful experience, they will be open to attending parenting classes.

While some clients will have access to computers within their own homes, many will rely on schools, libraries, community centers, and agencies to provide access. In many cases, costs related to equipment purchasing and maintenance would need to be absorbed by someone other than the client (Grover, 1998). The initial costs of implementing technological programs must be considered within the full formula of a cost-benefit analysis. Initial start-up costs, when compared to the price of time, wages, and materials for more traditional programming over time, are minimal.

Therapists must be shown that technology affords the opportunity to provide meaningful, one-on-one, confidential, and individualized interventions for clients in a much shorter period of time. The advantages that interactive CD-ROM technology offers seem significant. Parents can receive immediate, individualized, nonjudgmental feedback in a private setting, proceeding at their own pace. The parents are able to view models of effective parenting, to practice choosing effective strategies for dealing with their child's problem behaviors, and then to incorporate these methods into their repertoire.

Services utilizing technology must strive to make it user-friendly. Programs must be visually appealing and easy to negotiate, and they must offer interactive instruction. Programs must also consider the diversity of users. The content and format should reflect the needs and preferences of the users. Technological programming can more readily accomplish this compared to more traditional programming because it can: 1) present a variety of diverse, effective models; 2) provide content which is specific to parents of adolescents; 3) give immediate feedback to parents in a non-threatening, private setting; 4) offer various levels of accessibility for parents of differing computer literacy; and 5) allow parents to access the program at non-traditional hours to better adapt to busy schedules. When Internet download time is improved through increased bandwidth, these types of programs will be delivered in parents' homes through the Internet. Another advantage of a computer delivering the intervention compared to a person is that the user will not be distracted by characteristics of the person (gender, age, race, social class, marital status, parental status) which are irrelevant to the content.

Gaps in Knowledge of Interactive Video Approaches to Family Interventions

With the exception of the PW CD-ROM, the scientific bases for interactive video approaches to teaching have involved applications unrelated to family or parent interventions. Findings from

the handful of studies on the PW program need to be replicated independent of Ohio University faculty and students. Such replication attempts are underway in many locations. This interest in replication has been due to the unusually large effect sizes, ease of implementation, and assurance of treatment integrity. In addition to several university replication attempts, a promising development has been the interest in controlled evaluation studies from social service agencies who have purchased the program. Most of these agencies had to receive grants to fund the program, and evaluation has often been a requirement of the granting agencies.

Although samples in the early studies of PW have included some ethnic diversity, we need to look at larger samples of Hispanic and African American families to learn more about cultural appropriateness and effectiveness. A feasibility study in New York will address this need. Other gaps in our knowledge about the effects of this technology are the relative effectiveness and cost-effectiveness of this approach vs. parent education, parent training, and family therapy for populations varying in risk. We also need to know the additive effects of this technology when combined with traditional approaches, including the effects on engaging high-risk families. For example, when we offered the PW program (via a laptop computer in their homes) to families of chronic delinquents, several families who had refused traditional services assented and subsequently agreed to participate in family therapy. We also need to know the effects of including other family members in the intervention, such as teens, children, and the father (since all the participants in our studies have been mothers), and we need to determine the maintenance of these effects over time. Can we enhance and extend treatment effects via repetition of the program at certain intervals or by adding brief therapist consultation (either face-to-face or by telephone or via the Internet)? We are looking at this in a large study in Manchester, England. Can this interactive video approach be effective when applied to parents of younger children, as primary or secondary prevention? We are currently developing such a program for parents of 4-10 year olds.

The gaps in our knowledge between the science base and practice include the issue of understanding the reason for service provider resistance to use of this technology. We have noted that the greatest resistance comes from the mental health profession. Research needs to be done on which activities of therapists, particularly those that cannot be duplicated with multimedia technology, add reliable treatment effects to the technology. We also need to identify the most salient predictors of parental resistance to parent education in general (which may vary by family risk and social class) and develop cost-effective methods of overcoming that resistance (Lagges, 1999). Although we know we can engage high-risk families by providing opportunities for community networking and strong incentives, as well as removing barriers to participation, such labor-intensive approaches limit the widespread application of parent education. Perhaps public service announcements and letters from credible community leaders, aimed at specific beliefs parents hold which prevent them from using parent education, could increase their participation.

Another area for study is reimbursement: what changes in reimbursement for services would be needed to get substantial numbers of service providers to use this technology? Currently, Medicaid, insurance companies, and HMOs require face-to-face contact with a professional for reimbursement. As the number and quality of interactive CD-ROM and web-based interventions increase, reimbursement policies may include them.

Action Steps for Transfer of CD-ROM Technology from Research to Practice

A variety of steps can facilitate the transfer of our knowledge of technology-based interventions to practice. In addition to the usual route of presenting the program's content and research findings at professional conferences,

presenters should demonstrate the technology. Many professionals have never seen a highly interactive (Level III) CD-ROM, interactive video program, or an Internet -based intervention. Seeing it clarifies its advantages immediately. There are many appropriate professional organizations and conferences dealing with the treatment of substance abuse, such as those sponsored by juvenile justice, mental health, child protective services, county extension agents (including Certified Family Life Educators), marriage and family educators and therapists, criminal justice, etc. National conferences permit the widest exposure to those most active in their professions. Presentation at state conferences offers the advantage of increasing the networking and collaboration amongst a more cohesive group of professionals.

Conferences sponsored by state and federal government agencies are emphasizing "best practices" interventions, which meet varying standards of empirical validation. Governmental agencies also publish and disseminate information on such practices, including website listing.   This CD-ROM technology can also be demonstrated through a website, eliminating the need to mail demonstration versions of the program. The website devoted to the CD-ROM can also list all the research on the program, as well as other information important to an agency considering implementation. The PW program has a website which exemplifies these suggestions (http://www.familyworksinc.com).   Within the next few years, these interactive programs will be available on the Internet and thus will be available worldwide to families who have Internet access (either at home, work, or through their public library). This development will have truly awesome possibilities for the dissemination of effective interventions.

To maximize access to this technology, as well as to other validated treatment approaches, the program should be packaged where it can be marketed commercially. This is a process for which few academic progenitors of these programs are prepared or supported. Universities can and should assist faculty in these ventures by providing startup help for small businesses, such as the Innovation and

Technology Transfer Center at Ohio University. The university provided office space and support in the form of telephone, duplication, faxing, secretarial help, and, most important, consultation with on-site experts in all aspects of developing a small business, including marketing advice and research, copyrighting, patents, and licensing. Universities can offer financial support to bring a program to the market in exchange for royalty sharing agreements.   Family Works Inc. was the company formed at the university's business incubator, whose goal was the marketing of CD-ROM parent and family interventions. Profits from the sale of the CD-ROM are used for developing upgrades based on research and user feedback, as well as for immediate funding for research when unexpected opportunities arise. Such university-private company partnerships offer advantages that neither entity could accomplish alone.

In addition to providing business incubation, universities need to help faculty progenitors of effective programs commit the time needed for the assorted activities mentioned above. The responsibility and opportunity to disseminate programs fall almost exclusively on the progenitor, as he/she is the most (or perhaps, only) motivated, knowledgeable, and credible person to do this. Unfortunately, the progenitor's involvement in traditional academic duties precludes serious commitment to dissemination.   Academic departments, which tend to be insulated from the community and the applied field, seldom provide rewards for outside ventures (unless tied to grant funding). The typical academic mindset does not value entrepreneuring. In many locations the progenitor will expose him/herself to criticism for not sharing the department's workload. To offset such obstacles, university administrations can provide substantial recognition, release time, and financial support. Some progenitors who work at medical schools have far more flexibility and support for

dissemination activities (i.e., Scott Henggeler, who is successfully disseminating Multisystemic Therapy). Some federal grant programs seeking to encourage dissemination of evidence-based programs, such as Karol Kumpfer's Strengthening America's Families grant and Del Elliott's Blueprints for Violence Prevention grant, pay progenitors to provide training and ongoing consultation (essential for maintaining therapeutic integrity) to agencies seeking to implement their programs..

Another step to aid dissemination is media attention. Many universities have media relations departments, which publicize faculty members' work. This can take the form of news releases coinciding with a conference presentation of research findings, or making the faculty member available to journalists and radio and TV staff for topics of interest via Profnet. Progenitors who talk to journalists covering professional conferences not only inform other professionals of their work, but the public and policy makers as well. The author's contact with the BBC when they were covering an international conference resulted in a subsequent BBC documentary (*Trouble With Boys*). The documentary showed the changes to a family of a delinquent boy after the family's participated in functional family therapy and the PW program. The broadcast facilitated the dissemination of empirically-validated parent and family-focused preventive interventions in the U.K. Public policy was also influenced when policy makers attended the same conference and subsequently required "Parenting Orders" to be part of delinquency treatment programs nationwide.

Finally, a step we have taken to foster dissemination is to continue contact with agencies that have purchased the PW program. We make regular calls to encourage them to implement the program as designed, to conduct controlled evaluations on its impact, and to offer consultation on overcoming barriers in their communities. We encourage agencies to collaborate with other agencies to suggest needed areas of research and to submit their evaluations for presentation at their professional conferences. We may also provide a network of other agencies that are conducting evaluations to facilitate information transfer. By staying in contact with a variety of agencies doing this work, we can incorporate their feedback and research results into improvements to the program. This can be done often and inexpensively, via upgrades to the PW program. Changing the CD-ROM is a much less daunting task than that faced by developers of traditional programs when they wish to introduce changes, following initial training, in the practices of service providers.

Conclusion

Professionals who provide services to families at risk for substance abuse and delinquency are very often unaware of evidence-based interventions, and they face serious obstacles to substantially increasing the number of families who can receive effective services. They are also unaware of the literature on the effectiveness of interactive videodisk instruction and on the power of videotaped modeling of parenting skills to produce lasting changes in the children of parents who view the tapes. The author's parenting skill training CD-ROM, which utilized knowledge from those two areas of literature, has shown promise in producing effect sizes comparable to those found with interactive videodisk instruction. Due to the simplicity of implementation, the assurance of treatment integrity, and the low cost, this type of program can facilitate the dissemination of research-based methods among practitioners. Practitioners other than mental health professionals seem to be the most promising audience for technology-based prevention efforts.

Table 1

Comparison of Studies of Parenting Wisely

Study	Participants (n)	Site	Design	Follow Up Period	Chil PW (Coh
Segal et al. (1999)	Parents of 11-18 yr olds (42)	Community mental health and juvenile Detention	RA[1] to 2 treatment groups	1 month	.78[2],
Lagges & Gordon (1999)	Teen parents of infants and toddlers (62)	School	RA to treatment and control	2 months	.67[4]
Kacir & Gordon (in Press)	Parents of problem adolescents (38)	University	RA to treatment and control	2, 4 months	1.2[2]
Gordon & Kacir (1998) months	Parents of delinquents .59[2], .76[3]	Community and University	Treatment and matched control	1, 3, 6	
Woodruff & Gordon (1999)	Parents of 9-13 year olds	Home	RA to 2 treatment groups	2, 6 months	.37[2]

[1] = RA: Random Assignment
[2] = Eyberg Child Behavior Inventory
[3] = Parents Daily Report
[4] = Parental response to hypothetical problem behavior

Table 2. Comparison of Therapy and Interactive CD-ROM

Therapy   Interactive CD-ROM

_____

1. Judgment by therapist   No judgment by computer

2. Client defensiveness main obstacle to   Minimal client defensiveness
    progress

3. Majority of therapy time and cost   Little of program time devoted to resistance
    devoted to resistance

4. Client discloses parenting errors   Client recognizes parenting errors by actors

5. Feedback on parenting errors infrequent   Client actively seeks feedback on parenting
    and indirect   errors performed by actors in program

6. Verbal descriptions of parenting   Detailed visual and verbal examples of
                                                 parenting

7. Infrequent reinforcement of good   Frequent reinforcement of good parenting
    parenting practices   practices

8. Client rarely asks for repetition of   Client can repeat any part of program any time
    unclear advice

9. Pace selected by therapist   Pace selected by client

10. Focus on therapist-client relationship   Exclusive focus on teaching good parenting

11. Difficult to improve therapist skills   Relatively easy to improve program content

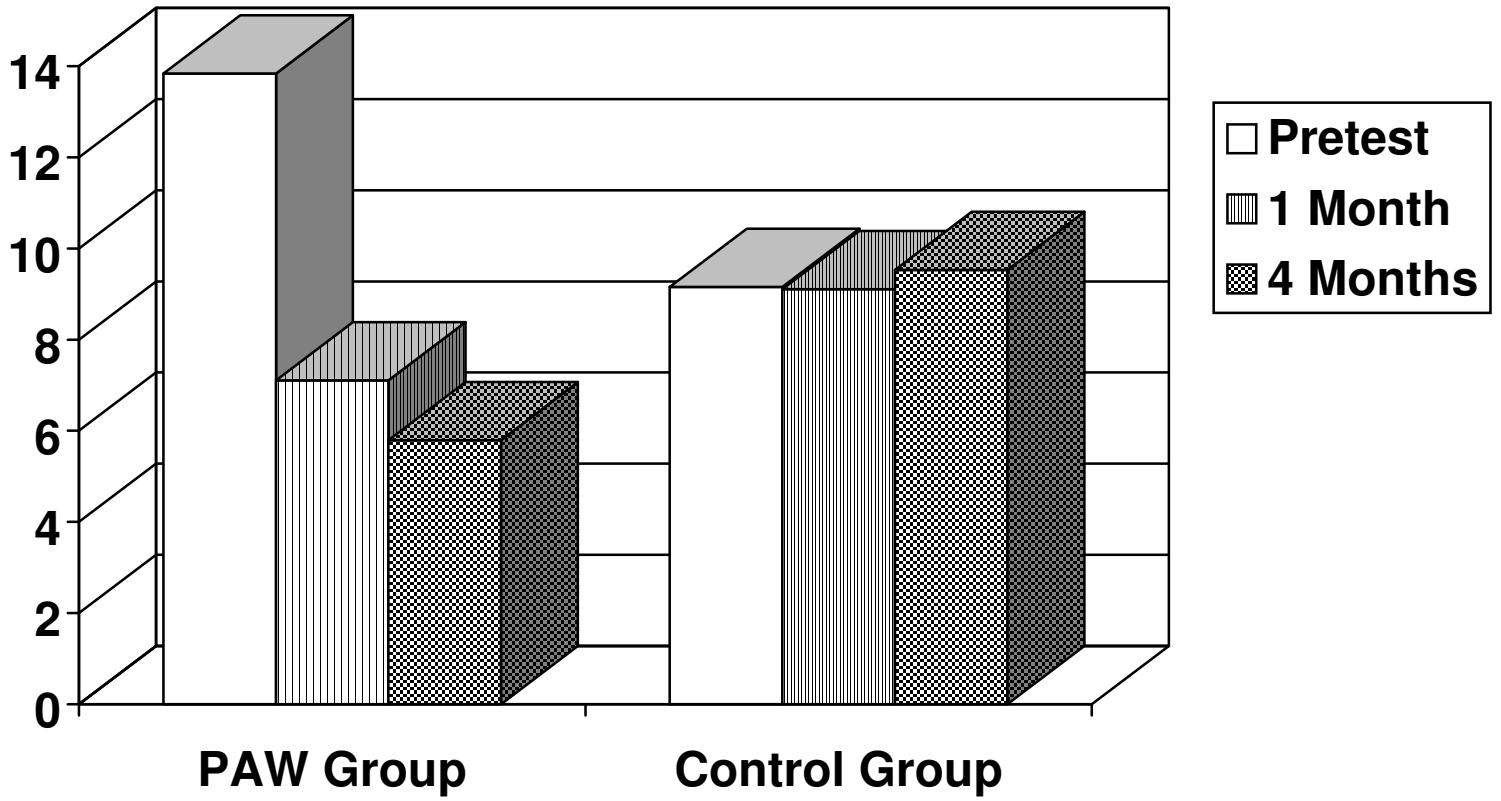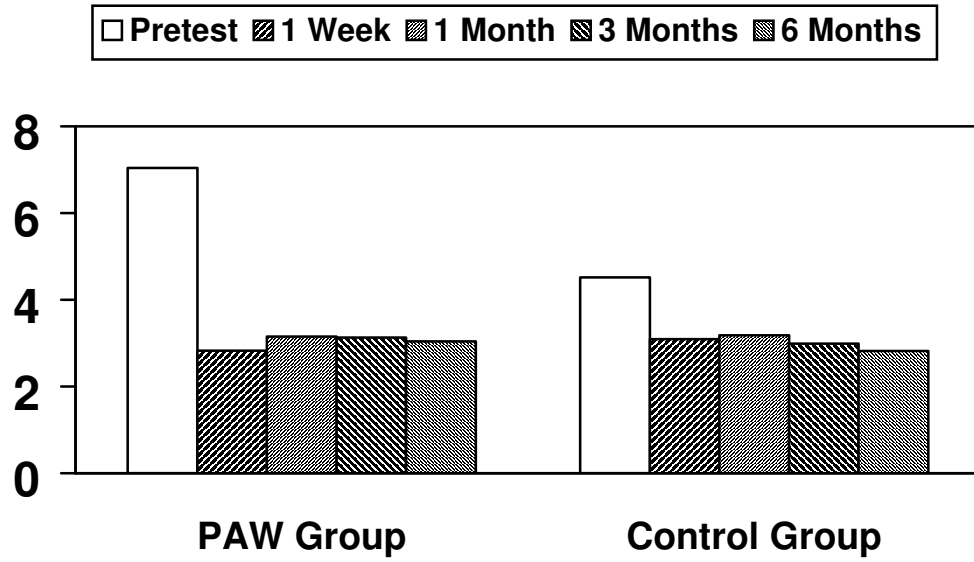Fig. 1. Changes in Problem Child Behaviors on Eyberg Child Behavior Inventory

Fig. 2 Changes in Child Problem Behavior on Parent Daily Report

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