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EFFECTS OF POSITIVE BEHAVIOR SUPPORT TRAINING ON CHILDREN'S  
MALADAPTIVE BEHAVIOR, PARENTING SKILLS, AND PARENTAL SUPPORT  
OF FAMILIES WITH CHILDREN WITH DISABILITIES

by

Alla Jones

A thesis submitted to the faculty of

Brigham Young University

In partial fulfillment of the requirements for the degree of

Master of Science

Department of Counseling Psychology and Special Education

Brigham Young University

April 2008

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BRIGHAM YOUNG UNIVERSITY

GRADUATE COMMITTEE APPROVAL

of a thesis submitted by

Alla Jones

This thesis has been read by each member of the following graduate committee and by majority vote has been found to be satisfactory.

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As chair of the candidate's graduate committee, I have read the thesis of Alla Jones in its final form and have found that (1) its format, citations, and bibliographical style are consistent and acceptable and fulfill university and department style requirements; (2) its illustrative materials including figures, tables, and charts are in place; and (3) the final manuscript is satisfactory to the graduate committee and is ready for submission to the university library.

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## ABSTRACT

### EFFECTS OF POSITIVE BEHAVIOR SUPPORT TRAINING ON CHILDREN'S MALADAPTIVE BEHAVIOR, PARENTING SKILLS, AND PARENTAL SUPPORT OF FAMILIES WITH CHILDREN WITH DISABILITIES

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Master of Science

Family stress is affected by a child's challenging behavior and by the disruption of family routines as a result of the child's disability. Therefore, families with children with disabilities need professional support as they work with their children to decrease their children's behavior problems and to reduce the level of parental stress. This study examines in-home training in Positive Behavior Support using the model of parent-professional collaboration. Parents of 35 children with disabilities and challenging behaviors participated in this research. All participants were on the state of Utah's Family Support waiting list. Graduate students provided behavioral education to families by completing a Functional Behavioral Assessment, developing appropriate interventions, and analyzing intervention data. Children with disabilities experienced a significant reduction in the frequency and severity of their problem behavior as a result of the interventions. There was not, however, a significant increase in parents' perceptions of their limit setting skills nor parental support received. The results of this project may

provide motivation for special educators, school psychologists and other specialists to collaborate more with parents in the education of their children with disabilities.

## ACKNOWLEDGMENTS

I would, first of all, like to express my gratitude to Dr. Tina Dyches for granting me the opportunity to work with these families. I would also like to thank her for her efforts in guiding me through this research and for the many hours she dedicated to helping me in the revisions of this paper. I could not have done this without her.

I would like, of course, to thank Dr. Lynn Wilder for introducing me to this project in the first place and for her helpful direction throughout the process of completing my thesis. Even with so many other responsibilities in her new work environment she always found the time to communicate with me and support me from a distance.

Dr. Lane Fischer's aid in the statistical aspects of this research was invaluable. His suggestions for changes in our methods of statistical analysis led to the discovering of the significant results of our work. It was a privilege for me to have him on my committee and have him as my instructor.

I want to thank Karolyn King-Peery for her constant assistance and leadership in this project.

Finally, I want to thank my husband, Asher, for all the emotional and practical support that he provided through the challenges and hardships that I had to confront while conducting this research.



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## INTRODUCTION

Individuals with disabilities often exhibit challenging behavior problems. Family members of these individuals may experience high levels of stress trying to cope with these problem behaviors. Nearly 70 years ago little was known about behavior modification strategies for the human population. This section will briefly describe the history of the development of Applied Behavior Analysis and Positive Behavior Support and the principles that are now used to appropriately manage problem behaviors.

### *Applied Behavior Analysis*

The science of Applied Behavior Analysis (ABA) is the systematic extension of the principles of operant psychology to issues of social importance (Baer, Wolf, & Risley, 1968). The application of ABA to humans began more than 70 years ago with seminal work conducted at the University of Washington. There, Harris, Johnston, Kelley, and Wolf demonstrated the effects of social reinforcement on the behavior of a highly unsocial preschool child (Lutzker & Whitaker, 2005). Similarly, Neel reported that in 1959 simple reinforcement strategies on adults with schizophrenia who lived in a psychiatric institution in California were used. In addition to the use of reinforcements, aversive stimuli were widely used as procedures to decrease the occurrence of problem behaviors. For instance, contingent electric shock paired with the verbal command “No” was used to teach an eight-year-old girl with autism to stop biting herself (Neel, 1978). Later, in 1964, remarkable behavior changes with Dickey, a 3-year-old boy with autism who had serious behavior problems were achieved (Lutzker & Whitaker, 2005). Their work eventually led to a series of advances that have resulted in the behavioral technology people employ today. This technology has provided individuals with

disabilities opportunities to learn that were not available before that time. Not long after these advances, several now well-known publications that reflected an applied behavioral focus began circulating, including the *Journal of Applied Behavior Analysis*, *Behavior Modification*, *Education and Treatment of Children*, *Child and Family Behavior Therapy*, *Behavioral Interventions*, and *Journal of Positive Behavior Interventions*.

ABA has now become a common treatment for people with various disabilities. It is not as widely and systematically accepted among teachers of students without disabilities. Lutzker and Whitaker (2005) argue that ABA would be accepted and utilized on a much broader scale if professionals would avoid the use of jargon (words unfamiliar to the general public), be always inquisitive and open to new methods and ideas, be conscious of the already existing related literature, and accept the fact that many other disciplines have much to offer the discipline of behavior modification.

#### *Emergence of Positive Behavior Support from Applied Behavior Analysis*

In an effort to expand methods and techniques used in ABA, Positive Behavior Support (PBS) was developed. Positive Behavior Support is a nonaversive approach toward decreasing maladaptive behavior and increasing adaptive behavior (Johnston, Foxx, Jacobson & Mulick, 2006). It represents a basic change from older methods of changing behavior through external controls such as rewards and punishments and is based on a commitment to end coercive strategies. PBS originated due to the existing controversy surrounding the use of aversive consequences with people who have developmental disabilities. Rather than just focusing on eliminating the problem behavior, PBS focuses on understanding why problem behavior occurs in an effort to teach alternative positive behaviors in a conducive environment (Johnston et al., 2006).

PBS and ABA share eight major attributes: person-centered planning; functional assessment; the application of positive intervention strategies; multifaceted interventions; environment focused procedures; meaningful outcomes in employment, education, and societal inclusion; focus on ecological validity; and systems-level interventions (Carr & Sidener, 2002). Each will be discussed briefly.

As one of the attributes that PBS and ABA share, person-centered planning is concentrated on the behavior of individuals within (in connection with) their individual characteristics and the environment. This principle is directed to develop interventions that attend to specific individual characteristics and needs of individuals (Carr, et al, 2002) rather than applying basic principles indiscriminately to individuals with challenging behaviors. Functional assessment has been a focus of ABA for two decades directing an increased use of reinforcements to change inappropriate behavior and has now become a defining characteristic of PBS. “Functional assessment refers to the full range of strategies used to identify the antecedents and consequences that control problem behavior” (Horner, 1994, p. 401). These strategies are used to determine the reason or function of the problem behavior. All PBS interventions begin with assessment of the function of the behavior in order to develop effective strategies for teaching new alternative competing behaviors. Teaching new alternative behaviors, identified as one of the most essential principles of PBS (Horner, et al., 1990), has become widespread in the last 15 years. Functional behavioral assessment is now widely used in homes and schools of the individuals with challenging behavior problems (Snell, 2005).

Another attribute that ABA and PBS have in common is the application of positive intervention strategies (Carr & Sidener, 2002). The PBS strategy of teaching new

behaviors is accomplished by providing interventions based on contextually-relevant positive reinforcement. This principle appears to be one of the most essential principles in the science of Applied Behavior Analysis and includes interventions such as delivering praise, using token economies, and differentially reinforcing appropriate behaviors.

Both ABA and PBS use multifaceted interventions to receive significant results in behavior change. For example, PBS interventions are comprised of assessment, behavior treatment, and parental training (Carr & Sidener, 2002). These interventions include positive reinforcement of appropriate behavior, teaching parents and teachers methods of assessing and providing appropriate interventions for reducing behavior, and using antecedent-based techniques.

Environment focused procedures and the production of meaningful outcomes in employment, education, and societal inclusion are two important components of the foundation for PBS and ABA. Significant behavior change occurs when physical environments are altered first (Carr & Sidener, 2002). Horner and colleagues (1990) emphasized the significance of building environments with effective consequences.

The last two attributes, a focus on ecological validity and systems-level interventions, also support the theory of a historical connection of PBS to ABA. Ecological validity emphasizes the importance of generalization and the maintenance of the learned behavior. Systems-level interventions include collaborative efforts of a team in the decision making process and problem solving.

Therefore, all of the common attributes of ABA and PBS suggest that PBS is an emphasis of essential principles of ABA, and not as a separate science. However, PBS has placed more emphasis on values such as dignity, social validation, and inclusion



rather than exclusively on science. This added emphasis as well as several other factors has led to the success and development of PBS, including a \$670,000 grant given by the National Institute on Disability and Rehabilitation Research to create a Research and Training Center for Nonaversive Behavior Management, dissemination of the PBS “brand name” by the Office of Special Education Programs Center, representation of PBS at most special education and developmental disabilities conferences, and the recent publication of the *Journal of Positive Behavior Interventions*.

Due to the familiar and relatively nontechnical language used in PBS models, the emphasis on selected values, the success of leaders to garner the support of federal agencies, and the widespread dissemination of its name, PBS has experienced significant growth in a very short period of time (Johnston et al., 2006).

#### *Problem Statement*

Although the fields of ABA and PBS have gained widespread acceptance among those who work with individuals with disabilities, technical knowledge and skills are not adequately applied, particularly among parents raising children with disabilities. Since family stress is affected by the child’s challenging behavior and by the disruption of family activities and opportunities as a result of a child’s disability, these families may need support to apply PBS principles in their homes. One type of support is in-home training in positive behavior support; however, the effectiveness of short-term in-home support has not been sufficiently documented in the literature.

### *Purpose of the Study*

The purpose of this study is to examine the effects of in-home PBS training on behavior problems, parenting skills, and parental support in families with children with developmental disabilities.

### *Research Questions*

This study addresses the following research questions:

1. What are the differences in pre and post ratings of problem (maladaptive) behavior and the behavior's frequency on the Scales of Behavior-Revised (SIB-R) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?
2. What are the differences in pre and post ratings of problem (maladaptive) behavior and the behavior's severity on the Scales of Behavior-Revised (SIB-R) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?
3. What are the differences in pre and post ratings on the Limit Setting subscale of the Parent-Child Relationship Inventory (PCRI) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?
4. What are the differences in pre and post ratings in parental support on the Support Subscale of the Parent-Child Relationship Inventory (PCRI) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?

## REVIEW OF LITERATURE

This section reviews the existing literature regarding the application of a collaborative approach in training parents to use Positive Behavior Support strategies in order to reduce challenging behaviors and increase adaptive behaviors of children with autism and other developmental disabilities.

### *Parent-Professional Collaboration in Positive Behavior Support*

While Applied Behavior Analysis is centered almost solely on the efforts of experts to decrease behavior problems in a child with disabilities, positive behavior support is based on a collaborative approach between parents and professionals (Keen & Knox, 2004). Parent-Professional collaboration has been defined as laboring together where professionals work with parents by “actively soliciting their ideas and feelings, understanding their cultural context, and involving the therapeutic process by inviting them to share their experiences, discuss their ideas, and engage in problem solving” (Lucyshyn, Dunlap, & Albin, 2002, p. 159). In parent-professional collaboration, professionals may represent the specialist in specific behavioral intervention strategies, while the parents are the experts on their child and make decisions on implementing behavioral strategies according to the family’s daily routines (Brookman-Frazee, 2004). On the other hand, the “noncollaborative model of parent education” involves decision making by the therapist without including parents in the process (Brookman-Frazee, 2004, p. 197).

Brookman-Frazee (2004) examined the impact of the parent-professional education methods and of the same techniques used by the professionals alone on parental stress and confidence and child responsiveness and engagement. Parent

education included collaboration between parents and professionals where the parents are the experts of their children and the professionals are the parents' teachers instructing them in specific methods in managing behavior. In the clinician-directed model, the professionals used intervention procedures without involving parents in any of the activities. Thus, the first model is family-centered and addresses the needs of the family to learn appropriate skills and to improve the quality of life, whereas professionals directly working with the children focus on behavior modification methods and develop the parents' dependence on the professionals' skills. Results of Brookman-Fraze's study indicated low parent stress when using the parent/professional collaborative model compared to the clinician-directed method. Parent confidence showed an increase in the parent training program. Children increased interest and happiness levels and showed a significant increase in their engagement and responsiveness in interaction with their parents. Therefore, the study suggests that, for these parents, the collaborative approach to problem-solving is more effective in helping parents of children with disabilities release stress and gain confidence in their abilities in managing their children's behavior than the noncollaborative model of intervention (Brookman-Fraze, 2004).

A collaborative approach for positive behavior support encourages parents and professionals to work as a team to use functional behavior assessment principles, seek natural family routines appropriate for the intervention, and create and implement behavior support plans for the family (Marshall & Mirenda, 2002). Additionally, the collaborative approach becomes essential in supporting parents as they await the provision of in-home support services. Each of these points will be discussed below.

*Functional behavior assessment.* Functional Behavior Assessment was developed

to help parents and professionals to identify specific environmental events that increase the likelihood of occurrence of the child's problem behavior as well as "to understand the child's strengths and preferences" (Marshall & Mirenda, 2002, p. 218). Functional Behavior Assessment is also directed to identify the problem behavior, create a hypothesis of its function, and find the context of family routines for implementing the interventions (Marshall & Mirenda). It may be conducted through interviews or direct observation in order to identify the patterns of behavior problems (Dunlap, Newton, Fox, Benito, & Vaughn, 2001). Hastings and Noone (2005) stated that basing treatment of behavior problems, such as self-injury, on results of a functional assessment is more ethical than applying an eliminative behavior modification approach by simply performing interventions to reduce the problem behavior. They support this conclusion through several main points. Persons with self-injurious behavior are entitled to effective treatment. Since eliminative strategies alone do not often address the underlying causes of the behavior problem, these approaches could have unpredictable effects. Often, new behavior problems will emerge to take the place of the eliminated behavior, making this technique ineffective. For instance, when a child has a problem behavior of self-biting due to self-stimulation, reducing problem behavior without identifying its function may redirect this child to strike his/her head to continue fulfilling sensory needs.

On the other hand, functional assessment helps to prevent occurrence of another problem behavior by teaching the child a new alternative behavior that serves the same function as the earlier identified problem behavior. In most cases, the application of the least restrictive treatment alternatives is favored. Since they involve new behaviors being learned to replace the problem behavior, approaches based on a functional assessment

would be considered constructive rather than eliminative. Treatment based on a functional assessment is by definition likely to be less restrictive and thus ethically preferable.

Identifying the function of problem behaviors has provided information about gender differences and longevity of specific functions. Reese, Richman, Belmont, and Morse (2005) identified specific functions of disruptive behavior performed by children with and without autism. The results of their study manifested patterns in identified functions of disruptive behavior. The function of the behavior for boys with autism was identified as gaining access to items used for repetitive behavior and escaping non-preferred sensory stimulation. The disruptive behavior of boys and girls without autism served specific social functions such as gaining attention or avoiding demands. These functions were also found within the female population with autism. Therefore, this study suggests that functional behavioral assessment may be used to identify differences in behavior functions between groups of individuals (Reese et al., 2005).

Similar research was conducted with a sample of 166 children with severe intellectual disabilities and/or autism. This study identified the tendency of “abnormal” behavior to decrease with age by assessing children under 15 years old, then 12 years later reassessing them. This assessment also showed that the students’ behavior functions changed with time. However, despite developing a new program that produces more valid results, this study does not differentiate the individuals’ sex, developmental, or chronological age as it was done in previously described research (Murphy et al., 2005). Both sets of collected data were based on the parent interviews, and there were no direct observations conducted.

It is well known that families are valuable assets of information about their children. After spending a large amount of hours with their children, they provide information which is essential for functional assessment and which may be difficult for professionals to access without collaboration with parents (Dunlap et al. 2001). Having professionals provide PBS training in the families' homes offers several advantages to the parents and to the children with disabilities and problem behavior. Collection of data can be accomplished more easily and consistently by parents if done within the home (Wierson & Forehand, 1994). The need for generalization training and behavior maintenance from clinic or school to home is, of course, greatly diminished by using the home setting (Fox, Wyatte, & Dunlap, 2002; Marchant & Young, 2001).

*Family routines.* Behavior problems of children with disabilities may disrupt family daily routine activities such as bathing, mealtime behavior problems, getting dressed, grooming, and sleeping (Buschbacher, Fox, & Clarke, 2004). These routines establish a family's daily life structure and are often directed to accomplish the necessities of life (Lucyshyn et al. 2002). Therefore, it is essential that positive behavior support interventions engage children in their family's daily routines rather than as "add-on programs" (Marshall & Mirenda, 2002). "If behavior support strategies move families further from their desired daily activity settings, then families are likely to drop the strategies over time" (Lucyshyn, et al., p. 176).

An example of PBS used within the family routine follows. Buschbacher, Fox, and Clarke (2004) considered three family routines during which seven-year old Samuel, dually diagnosed with autistic-like characteristics and Landau-Kleffner syndrome, exhibited three problem behaviors. During dinner Samuel would not eat dinner with his

family but would instead grab his preferred foods from the table and eat them somewhere else. When met with any sort of resistance to this behavior, he would exhibit violent behavior. If family members ever attempted to watch a video or TV show not of Samuel's choosing, he would exhibit aggressive behavior, making it impossible for the family to enjoy this activity. Samuel performed loud, aggressive, and violent behavior throughout the entire bedtime preparation. He often would wake up during the night and wake up other family members, making it very difficult for any family members to sleep well at night. Long-term supports, prevention strategies, replacement skills, and reinforcement of those skills were all developed in order to reduce Samuel's problem behaviors and increase his appropriate participation in each of the three aforementioned family activities. Results indicated significant reductions in Samuel's challenging behaviors and equally significant increases in his appropriate engagement in all three family routines. Samuel's parents and the main researcher were active partners in identifying the family routines for the intervention and overall positive behavior support planning. Therefore, the results of this study provide empirical support to the existing research on parent-implemented, in-home interventions and the ability of positive behavior support to produce favorable outcomes when implemented within family routines.

*Behavior support plans.* Functional assessment results serve as a foundation for developing behavior support plans, which include strategies for teaching appropriate behavior (Marshall & Mirenda, 2002). Behavior support plans are often intended to include methods that (a) reduce behavior problems, (b) present the child with new skills by considering factors that serve the function of the problem behavior, and (c) change



consequences in the environment that reinforce alternative behavior (Ingram, Lewis-Palmer & Sugai, 2005). Professionals that support the collaborative approach are more likely to develop appropriate interventions that lead to meaningful results in improving the quality of the family's life (Marshall & Mirenda). Parents are entitled to participate not only in implementing the behavior support plans but also in developing them (Brookman-Frazer, 2004). Because parents dedicate so much time to their children, they can often better understand their child's needs and provide essential information for creating effective treatment plans (Dawson & Osterling, 1997).

While developing behavior support plans, parents and professionals should consider the following four points: (a) support plans should involve defined changes in the behavior of people providing interventions, (b) plans are to be based on data collected from the functional assessment, (c) plans should be logically related to the problem as defined from the functional assessment and (d) plans "should have a good contextual fit with family members and with family environments in which plan procedures will be implemented" (Lucyshyn, et al., p. 107).

Boettcher, Koegel, McNeerney, and Koegel (2003) developed a family-wide positive behavior support plan in order to prevent problem behaviors. The mother of the children involved in the study was to soon undergo a major surgery and would be hospitalized for a week and incapacitated for several weeks afterwards. The children under study were 7-year-old Kelly Smith and two of her siblings. Kelly had autism and would often display such behaviors such as tantrums, aggression toward her siblings, noncompliance, and running away. Functional assessment data identified a connection between lack of predictability, structure, and behavior problems. A temporary system of

support was needed to avoid the lack of predictability, structure, and supervision that would occur as a result of Mrs. Smith's incapacitation. For collaboration purposes, a stakeholder meeting was held in which coverage of respite hours for all times that the children were not in school were coordinated and driving schedules were set up. Those involved in this meeting were family members, clinicians, and the respite providers. Also, a daily schedule was arranged to determine who would provide services on which days during the duration of the incapacitation. All involved in providing these services were trained beforehand in PBS in order to be able to effectively and ethically deal with any possible behavior challenges.

The family-wide PBS plan that was developed by the aforementioned care providers and professionals was as follows: Caregivers would provide positive consequences to the children to encourage appropriate behavior and deter problem behavior. Each child would choose a chore for which he or she would be responsible, and a chart was made on which the children could accumulate points for completing their assigned chores. The children then periodically received positive reinforcement for the earned points. There was ongoing support by the clinicians in the form of twice-weekly visits. The results of the interventions were positive with Kelly and her siblings displaying no major problem behaviors in both the home and school settings over a two month period.

As was mentioned earlier, family involvement in implementing positive support intervention strategies leads to meaningful results for persons receiving the interventions, as well as for the family unit as a whole. However, one of the challenges in implementing interventions may be inability of family members to maintain methods over time

(Marshall & Mirenda, 2002). Research conducted by Hudson et al. (2003) showed that with professional support, parents are more likely to proceed in the intervention process than when they do not have professional support. This study examined three different methods of delivering Signposts program materials to parents in order to decrease the child's problem behavior. Signposts materials included instructions in teaching skills to children with intellectual disabilities and dealing with their children's behavior problems by applying functional assessment and developing behavior support plans. One hundred ten families participated in the study, 46 of whom were meeting as a group with the therapist conducting the training session. Thirteen parents followed the manual independently; however, they received phone-calls from the therapist for on-going consultations. Twenty-nine families worked with the Signposts materials independently without professional support.

After the program was completed, data showed that behavior problems decreased in children of parents who used self-directed methods in applying the Signposts system as much as in children of parents receiving support from the therapist. However, many of the parents from the self-directed group were not able to complete the program. Therefore, parents may have needed therapist support in managing their children's behavior problems to be able to finish the program.

*In-home support.* Parent-professional collaboration becomes essential in supporting families in their crisis management while they wait for in-home services to be provided. All over the United States, thousands of persons with developmental disabilities are awaiting family support and services that they desperately need. Such services include family support, chore and housekeeping assistance, behavior support,

and Medicaid. Often, they are not told how long they will have to wait when they request services and are added to the waiting lists, and these people are often forced to wait patiently for indefinite amounts of time (Lakin, 1998).

There are several reasons that waiting lists continue to grow despite the fact that more people are receiving services than ever before. The majority of the people requesting services are adults who belong to the substantially larger baby boom generation (Lakin, 1998). Also, people with developmental disabilities, as well as all people, are living longer than they used to, so services are needed over a more prolonged period of time. Since these effects obviously cannot be controlled, a number of activities must be done in order to stop the problems caused by growing waiting lists. First, people, government officials in particular, must be informed about the present situation. Second, people already receiving aid should not be allowed to receive more than a defined minimum amount of support before others in the community have the opportunity to receive that set minimum as well. Third, any higher cost services that lack long-term cost effectiveness should be replaced with more efficient alternatives. Finally, a great deal of careful planning by leaders will be necessary to carry out these objectives in the most effective way possible (Lakin, 1998). The goal should be to support families, so that children and youth with developmental disabilities will be able to remain in their own homes with their natural families for as long as the families desire. While these people are awaiting services they need to be receiving professional support. The waiting period can actually be a beneficial time for learning and reflecting on alternatives. It should involve person-centered planning and service visitations to let those waiting know that they are not forgotten. The families should also be given an estimate of how long they

should expect to wait before services are provided so that they may plan accordingly. Once united, people with disabilities and their families can be the most powerful force in bringing about these vital changes (Lakin, 1998).

### *Results of Implementing the Collaborative Approach*

Research indicates that using the collaborative approach in teaching children with disabilities appropriate behavior may provide direct and indirect benefits to families. Direct benefits include a decrease of behavior problems and an increase in appropriate alternative behaviors. Parents may also benefit indirectly by experiencing a reduction in stress that was being caused by the behavior problems. These two types of benefits will be discussed.

*Behavior problem reduction and appropriate behavior increase.* Several studies indicated the efficacy of parent/professional collaboration in reducing behavior problems of children with disabilities by implementing positive behavior support plans. In a study of three families of three-year-old children with autism, Moes and Frea (2002) found that by educating families to use PBS, they may decrease the behavior problems of children with autism. All three families had similar targeted behavior problems. Functional communication training, which involves communication-focused interventions, was implemented in the families' homes and in the context of routines in which the behavior problems often occurred. The professionals visited the parents once a week during certain routines identified by parents as the most challenging due to their child's behavior. In the first visit with the parents, the professionals explained to parents that they were going to apply functional communication techniques to teach different appropriate responses. Results of this study indicated that assessing and providing interventions to children

during their family context decreased their problem behavior.

More recently, using parent experience and training in their research, Keen and Knox (2004) focused on decreasing behavior problems of three girls from one family. Two of these children were diagnosed with autism spectrum disorder and attention deficit hyperactivity disorder (ADHD), and the other child had ADHD only. Professionals met with the family to discuss the issues to be addressed in the study inviting all members of the family to participate. Functional assessment data collected identified the function of the problem behavior for each child. The mother of these children identified appropriate positive reinforcement according to the function of the problem behaviors to motivate her children to perform appropriate behaviors. Data collected showed positive changes in the children's behavior and parental satisfaction with the support that was given to them (Keen & Knox).

Another study showed the ability of the parents not only to teach their children appropriate skills, but also to educate others in applying the same techniques in teaching children (Symon, 2005). This study described a one-week parent education program of teaching Pivotal Response techniques, a set of motivational teaching procedures designed to improve the children's communication and social skills. The children's language and social skills were assessed during the teaching session with their parents and then with other caregivers. Three mothers of children with autism participated in this study. All children performed repetitive behaviors and had impairments in social and communication skills. Parents attended education sessions during the week which lasted for five hours per day for five days. They were able to learn specific techniques and use them at home teaching their children communication and social skills as well as teaching

other caregivers to use the same techniques. As results of the parent/teacher intervention, the children's skills were improved in interactions with their mothers as well as interactions with other caregivers that were trained by parents (Symon).

*Parental stress relief.* Parents may receive indirect benefits from using positive behavior support strategies with their children who have disabilities. For example, reduction of the problem behavior often changes the whole family's lifestyle by reducing parental stress (Vaughn, White, Johnston & Dunlap, 2005).

In a study conducted with 115 families, the decrease in the child's problem behavior was examined as well as the mother's adjustment level. All children within the age range of 4.6 - 19.4 years had intellectual disabilities. Most of these children had an additional classification of autism, Down syndrome, epilepsy, vision impairment, hearing impairment or cerebral palsy. Pre- and post-tests were administered to parents in all groups and compared with the control group responses. After the program was completed, data showed that behavior problems decreased, and there was less stress reported by the parents who belonged to the experimental group. They felt that they were accomplishing their role as parents better than in the past and that their needs were being met (Hudson, et al., 2003).

Another aforementioned study also resulted in the families receiving indirect benefits from the collaborative approach (Brookman-Fraze, 2004). This study examined the impact of parent-professional education on parental stress and the child's appropriate behavior engagement. Three boys with autism, ages 2 years and 10 months, 2 years and 8 months and 2 years and 5 months, participated in this study. Results of this study indicated low parental stress when using the parent/professional collaborative model.

Children showed significant increase in their appropriate behavior engagement and responsiveness in interactions with their parents (Brookman-Fraze).

*Relationship between parental stress and the child's problem behavior.* Several studies have been conducted in attempt to define the relationship between the two benefits described above, the reduction of problem behavior and parental stress relief. Different levels of parental stress may be influenced by the child's challenging behavior problems, lack of self-care skills, limitations in social skills, social pressure, and labeling (Lessenberry & Renfeldt, 2004). By addressing this issue of the relation of the children's behavior problems and parental stress, Baker et al. (2003) hypothesized that parental stress contributes to the increase of a child's problem behavior and vice versa. A sample of 205 children with and without developmental delays was used to answer this research question. The results indicated that children with developmental delays exhibited a higher rate of behavior problems than their peers without delays. The results confirmed the previous hypothesis. Parents of children with challenging behaviors reported more stress than parents of children with fewer behavior problems, and parental stress influenced the increase of behavior problems over time.

A similar study was conducted to examine the correlation between caregiver stress and the behavior problems associated with autism spectrum disorder (ASD) in children and adolescents. Teachers and parents of 193 children and adolescents with ASDs were included in this study. The Nisonger Child Behavior Rating Form (NCBRF) and the Scales of Independent Behavior-Revised (SIB-R) were used to collect data of behavior problem severity in the children with autism. The Parental Stress Index-Short Form (PSI-SF) and the Index of Teaching Stress (ITS) were used to measure stress levels



in the children's parents and teachers. The results indicated that behavior problems were indeed associated with caregiver stress (Lecavalier, Leone & Wiltz, 2006).

Other research also indicated that parental stress is directly related to the child's behavior problems. Eighteen couples of parents of children with autism were involved in a recent study (Hastings, 2003). The children's ages ranged from 8 years to 17 years. The results were similar to the previously described studies in that the mothers' stress was associated with the child's problem behaviors.

A study of 213 families conducted by Eisenhower, Baker, and Blacher (2005) helped to discover that stress levels of parents are not always related to the behavior problems exhibited by their children. Each family had at least one child age three to five with or without developmental delays. Different disabilities present among these children included Down syndrome, cerebral palsy, autism, and other undifferentiated developmental delays. Children without developmental disabilities were included to serve as a negative control group. The following conclusions were made from data collected from mothers. Although children with cerebral palsy displayed the highest severity of problem behaviors, the mothers of the children with autism reported the greatest negative impact on themselves due to their experiences with their children. This suggests that the differential impact on the mothers' stress levels are related to other additional aspect(s) of the cerebral palsy and autism phenotypes rather than only by the behavior problems exhibited by their children (Eisenhower, Baker, & Blacher).

Parent-professional collaboration in many cases has proven effective in enhancing the quality of family life (Brookman-Frazee, 2004). By obtaining the skills necessary for

implementing Positive Behavior Support in their homes, parents were able to reduce the problem behavior of their children with disabilities and decrease their own stress.

## METHOD

### *Research Design*

For this study, a one group pre- and posttest design was implemented, and paired  $t$  tests were used to compare the pre and post scores of parents' perceptions of (a) their parental limit setting skills, (b) the parental support received, and (c) the frequency and severity of their child's behavior problem. This is an appropriate design because it allowed for the effective measurement and comparison of differences in pre and post ratings of the Problem Behavior, Limit Setting and Parental Support subscales. PBS training served as the independent variable in this study. The foundation for this training was a parent handbook which outlined elements of PBS. The change of scores from the pre to post Scales of Independent Behavior-Revised (SIB-R) Problem Behavior and the pre to post Parent-Child Relationship Inventory (PCRI) Limit Setting and Parental Support subscales were the dependent variables in the study.

### *Participants*

All participants in this study are individuals presently on the waiting list for Division of Services for People with Disabilities (DSPD) Family Support in Utah and South Salt Lake counties. Family Support gives financial, medical, and emotional support through participation in the Family Council. The Family Council, originally organized to work in collaboration with DSPD, provides families raising children with disabilities information and resources on dealing with various issues, such as individual education plans, housing, and Medicaid. DSPD Family Support also provides respite services which includes assistance in daily care for the child with the disability. Participants were selected for this study because they had expressed a need for some sort of support. A

large portion of these families have been identified by DSPD intake workers as being at very high crisis levels.

Prior to being involved in the study, families seeking help through DSPD Family Support had already met with a DSPD intake worker, during which the family was interviewed and given the Inventory for Client and Agency Planning (ICAP) assessment and Developmental Delays or Mental Retardation (DD/MR) or Brain Injury Needs Assessment and Intake forms. The families' needs were then assessed and weighted in accordance with DSPD formulas. The intake scores were used to determine each particular family's position on the waiting list. Families with higher scores would receive services first, exhibiting the greatest need. It is, however, possible for a family to be placed near the top of the waiting list and still have to wait several years to receive support.

To select our sample from this waiting list, a number of procedures were followed. First, a mailing list was generated from the reported 165 families on the Family Support Immediate Needs List in Utah and South Salt Lake counties. Only children with disabilities and problem behaviors ages 4 – 16 were included in this study.

Tiffani Ortega, DSPD intake coordinator, then sent by mail an introductory letter and a Consent for Participation form to each of the listed families. This was done to further explain the research study and also give each family the opportunity to take part in the study. All families that exhibited interest were asked to sign and return the Consent for Participation form. That form contained a section for the parents to give information on their child and the reason for their interest in the study and also a section containing the project directors' contact information if any additional information was needed. Also

mentioned on the form is the fact that returning the letter of consent would not necessarily guarantee that the family would be selected to participate. The families' choice of whether or not to participate in the study did not have any effect on their placement on the DSPD Family Support Immediate Needs Waiting List. Names of families who returned forms were then placed on a list at the DSPD office. Alan Tribble, State DSPD Behavior Analyst, was responsible for selecting families for this study according to age, home placement, and perceived potential of the study to positively impact the family and child during the 10-week program.

The group of 35 children included in this study was comprised of 23 boys and 12 girls. Most of the children had autism ( $n = 14$ ), Down syndrome ( $n = 8$ ), or intellectual disabilities ( $n = 6$ ). The mean age of the participants was 8.9 (range 4 – 15 years). Information on each child's age, gender, and disability can be found in the table below.

Parents were informed that they could contact Dr. Tina T. Dyches, Dr. Lynn K. Wilder, or Karolyn King-Peery, if any concerns arose during the study. Any concerns not resolved by them were referred to Alan Tribble. Two case-by-case decisions were actually made during the study. The first dealt with suspected child abuse, and the second with fears of the child contemplating suicide. Mr. Tribble, Dr. Wilder, and Ms. King-Peery made a collaborative effort to ensure that these extreme cases were dealt with in a positive and ethical manner.

Parents who failed to continue to participate during the duration of the program were in no way penalized, however, those who did complete the entire program, including completing all data collections, were rewarded with gift certificates to local restaurants and department stores. In this case, all families completed the program.

Table 1.

*Study Participants*

Child	Age	Sex	Disability
1	10	M	Down syndrome
2	7	F	Acquired brain injury
3	7	M	Intellectual Disability
4	10	M	Autism
5	8	M	Autism
6	7	M	Autism
7	4	M	Autism
8	10	M	ADHD
9	8	M	Autism
10	8	M	Cerebral Palsy
11	14	F	Autism, Cerebral Palsy
12	9	F	Cerebral Palsy
13	11	F	Angelman syndrome
14	10	M	Autism
15	6	M	Autism
16	11	F	Intellectual Disability
17	5	M	Cri-Du-Chat syndrome
18	7	F	Turner syndrome Intellectual Disability
19	10	F	Down syndrome
20	14	F	Down syndrome
21	9	F	Intellectual Disability
22	15	M	Intellectual Disability
23	8	M	Down syndrome
24	14	M	Down syndrome
25	8	M	Down syndrome
26	8	M	Autism
27	12	F	Intellectual Disability
28	9	F	Down syndrome
29	11	F	Autism
30	6	M	ADHD
31	9	M	Down syndrome
32	8	M	Muscular Dystrophy
33	7	F	Autism
34	4	M	Autism
35	6	M	Autism

Graduate students in the School Psychology and Special Education programs at Brigham Young University were randomly assigned to work with these families.

### *Settings*

Each week graduate students met with their assigned parents. These meetings took place within the families' homes in order to work with parents in their natural environments. While parents received training in PBS, children were free to sit with the parent, be in the same room playing, or move freely in and out of other rooms. Graduate students never worked alone with a child or alone with one parent of the opposite sex in the home setting. Parents who felt uneasy having graduate students meet with them in their homes were given the option of working in a room in the BYU McKay Building. Although this option was available to all parents, only one family in this study chose to work in the McKay Building.

### *Materials*

BYU graduate students used The Parent Handbook as a project material (King-Peery & Wilder, 2005). The Parent Handbook is comprised of basic Applied Behavior Analysis (ABA) and Positive Behavior Support (PBS) principles. The handbook is written in a way that it can be easily understood by parents and, thus, easily usable for the behavioral education. The lessons contained in the handbook include the following topics: setting, antecedent, problem behavior, function of the problem behavior, maintaining consequences, alternative competing behavior, consequences and reinforcement of alternative competing behaviors, and behavior support plan. Each will be described briefly below, along with procedures for teaching parents these concepts. Also, the Parent Handbook demonstrates how to develop a behavior support plan.

*Setting.* The setting is the location where the child's problem behavior usually takes place (Horner, O'Neill, & Flannery, 1993), and this may be home, school, or another place in the community. Parents were given the opportunity to identify the settings of each of their child's problem behaviors and then to choose which of the settings to target first. The settings in which the parents were to provide instruction to their children were later expanded slowly as the child's behavior showed improvement. This was done systematically in order to produce generalization across all of the settings.

*Antecedent.* The antecedent is whatever it is that takes place right before the problem behavior is manifested. In other words, it is the event that triggers the behavior. Parents were asked to observe and then record what happened right before their child's problem behavior was displayed.

*Problem behavior.* The problem behavior is the behavior that presents challenges to the child and/or the family and is defined in both observable and measurable terms. Parents were taught how to identify the target behavior, observe its physical characteristics, and measure the frequency of its occurrence by collecting data.

*Function of the behavior.* The function of the behavior can be defined using four general categories including: communication, acknowledgement, sensory needs, and escape (Jerome & Mukamal, 2000). The parents, in association with their assigned graduate student, made hypotheses regarding the function of their children's problem behaviors.

*Maintaining consequences.* Maintaining consequences are defined as the consequences of the behavior or whatever is happening immediately after the behavior occurs that seems to be "maintaining" the problem behavior by causing it to continue to



occur. Parents were asked to identify what happens immediately after their child displayed the problem behavior. Parents determined and recorded both the positive and negative consequences of their child's problem behavior.

*Alternative competing behavior.* An alternative behavior is any behavior that is intended to replace the problem behavior. The behaviors generally chosen as alternatives are competing behaviors that cannot physically occur simultaneously with the problem behavior. For example, a child holding a baby toy in his/her mouth is not able to bite people at the same time. During the behavioral education, graduate students taught parents how they could decrease their child's problem behavior by using certain strategies. These include making the problem behavior:

1. Irrelevant - Reduce the need to perform the behavior.
2. Inefficient - Introduce the child with a new appropriate behavior that serves the same function as the inappropriate behavior.
3. Ineffective - Do not let the child receive what he or she wants by exhibiting inappropriate behavior (Crone & Horner, 2003).

Parents were then instructed to select and record an alternative competing behavior for their child's problem behavior.

*Consequences and reinforcement of alternative competing behaviors.* This is what happens immediately following the alternative competing behavior. The purpose of this step is to positively reinforce the acquisition of the alternative behavior so it continues to replace the problem behavior. Researchers (O'Neill et al., 1997) have stressed the importance of using rewards for appropriate behaviors that are at the very least equal to the rewards the child used to receive for the problem behavior. Parents were instructed by

graduate students to choose positive and natural consequences for the alternative, appropriate competing behavior.

*Behavior support plan.* The behavioral support plans prepared by parents and graduate students followed PBS principles that the graduate students had learned to use in their course work. Before the behavior plans were signed by parents and implemented in the homes, each plan was reviewed by a professor in order to ensure that each were based upon assessment results and followed ethical principles of PBS. Interventions, for the most part, emphasized positive approaches, creating adaptive behaviors. The plans included no corporal punishment, electric devices or other painful stimuli, nor the withholding of meals. This was ensured in strict accordance with rule number R539-6-12 of the DSPD Behavioral Supports Policy Manual (4<sup>th</sup> edition) (The Division of Services for People with Disabilities Human Rights Committee, 1994).

Guidelines for the behavioral interventions were supplied from The Habilitation and Adaptive Behavior Development Guidelines, Utah State Department of Human Services, Division of Services for People with Disabilities, Developed by The Division of Services for People with Disabilities Human Rights Committee, August 1994, manual. The manual outlines a three level system explained below:

Level I interventions do not require Human Rights Review. They are positive intervention procedures, and include instructional or task conditions. Examples include teaching functionally equivalent behaviors and using primary reinforcers.

Level II interventions require the approval of the Provider Human Rights Committee Review. They include mildly aversive procedures and non-exclusionary time outs. They include application of mildly noxious stimuli and response cost.

Level III interventions require review and approval of the Provider Human Rights Committee Review prior to implementation. They are moderately aversive procedures. They include isolationary time outs and deprivation of sensory stimuli.

The present study made use of Level I interventions only. These include reading social stories, receiving edible reinforcers, material reinforcers, etc. One particular family that participated in this study serves as an example of providing Level I interventions. An hour after breakfast and an hour before dinner when the mother was doing her housework, a six-year-old girl went to the refrigerator in the kitchen and took food without asking for permission. The consequences that maintained the problem behavior were the mother's raising her voice at her daughter and then giving her food. Thus, the girl was taking food without asking for permission in order to get her mother's attention. A new alternative competing behavior was developed which was asking for permission to take food out of the refrigerator. The girl was to take the picture of herself and her mother from the refrigerator, hand it to her mother and say "Please". As reinforcement, the mother and father immediately praised their daughter with an excited voice. The girl then received food.

#### *Instrumentation*

The two instruments used in this study include:

1. Parent-Child Relationship Inventory (PCRI)
2. Scales of Independent Behavior-Revised (SIB-R)

These instruments were completed by parents, either on their own or with the assistance of a graduate student, at the beginning and at the end of the study. To guide

instruction in the PBS training, parents and graduate students used the parent handbook. Each instrument will be described.

*Parent-Child Relationship Inventory.* The purpose of Parent-Child Relationship Inventory (PCRI) is to assess parent attitudes towards their children and feelings about their own parenting skills. PCRI helps to develop an overall view of the quality of the parent-child relationship and identifies aspects of that relationship that could possibly be problematic (Gerard, 1994). “The PCRI helps to put qualitative impressions in perspective by making normative comparisons possible” (Gerard, 1994, p. 1). Items used in PCRI have been rated by experts. This helps professionals and test takers to provide qualitative feedback and to collect additional empirical data on item analysis (Gerard). Through the cooperation of schools and daycare centers nationwide, the PCRI was administered to 1,100 parents in the United States for standardization. Standardization was used to define the internal consistency of the test, in other words, “the extent to which the items in the scale reflect a common trait or dimension” (Gerard, 1994, p. 29). The results indicate that the internal consistency is good. Statistically, this means that “no value is below .70, and the median value is .82” (Gerard, p. 29). The PCRI retest reliability, measured twice, also indicated good stability.

The PCRI is comprised of eight sections, including Support, Satisfaction with Parenting, Involvement, Communication, Limit Setting, Autonomy, Role Orientation, and Social Desirability. Responses are to be given through the use of the provided Likert scale (Strongly Agree, Agree, Disagree, and Strongly Disagree).

As low limit setting may become a source of stress in the family, parents need emotional and practical support to reduce level of stress that they experience. This

statement is used as one of the purposes of this research. Therefore, Limit Setting and Parental Support scales were chosen because of their relevance to this particular study.

Limit setting describes parents' effectiveness of current discipline strategies. "Discipline typically fails when it does not establish limits [for the child]" (Gerard, 1994, p. 10), and is often a good indicator of the parenting effectiveness. When Limit Setting scores are low, this often indicates a problematic situation within the home (Gerard).

PCRI Limit Setting includes the following 12 statements:

1. I have trouble disciplining my child.
2. I have a hard time getting through to my child.
3. My child is more difficult to care for than most children are.
4. I sometimes give in to my child to avoid a tantrum.
5. I wish I could set firmer limits with my child.
6. My child is out of control much of the time.
7. I wish my child would not interrupt when I'm talking to someone else.
8. I often lose my temper with my child.
9. My child really knows how to make me angry.
10. I sometimes find it hard to say "no" to my child.
11. I often threaten to punish my child but never do.
12. Some people would say that my child is a bit spoiled (p. 38).

The parental support scale assesses the emotional and practical support parents are feeling. If parents feel they are receiving the support they desire, this will be indicated by high scores on this scale. If parents feel they are overburdened and not receiving the

support they need, scores will be low. PCRI Parental Support includes these nine statements, with items under numbers four, eight, and nine reverse coded.

1. When it comes to raising my child, I feel alone most of the time.
2. I worry a lot about money.
3. I sometimes wonder if I am making the right decisions about how I raise my child.
4. I get a great deal of enjoyment from all aspects of my life.
5. I sometimes feel if I don't have more time away from my child I'll go crazy.
6. My life is very stressful right now.
7. I sometimes feel overburdened by my responsibilities as a parent.
8. I'm generally satisfied with the way my life is going right now.
9. My spouse and I work as a team in doing chores around the house.

*Scales of Independent Behavior-Revised.* If a certain behavior is socially unpleasant to others, is repetitious or very unusual in a typical social context, or interferes with a person's ability to cope within their environment it is usually classified as a problem behavior (Morreau, 1985). Such behaviors have been identified as one of the largest barriers to school, work, and community involvement for these children. Problem behavior is also believed to be one of the main causes for persons with disabilities being placed in more restrictive environments outside the home (Bruininks, Olson, Larson, & Lakin, 1994). Experts were able to develop the Problem Behavior Scale of the SIB-R in order to assess the two areas of adaptive behavior and maladaptive behavior. This study looks specifically at problem behavior using the maladaptive behavior section. Previously, the measurement of maladaptive behavior has been generally performed

using a list of maladaptive behaviors and simply finding out how many of the listed behaviors were demonstrated by the individual being tested. However, this list could not be exhaustive enough to contain all of the many possible problem behaviors, thus, the individual's final SIB-R score would be underestimated if he or she exhibited a problem behavior not included in the list. Other problems with traditional methods are that each behavior has an equal effect on the final score, although not all problem behaviors are equally important, and the frequency of the behavior is not even considered in the assessment.

The maladaptive behavior subscale used in this study is given without a basal or ceiling and only investigates the current behavior problems. Included in the Maladaptive behavior classification are: Hurtful to Self, Hurtful to Others, Destructive to Property, Disruptive Behavior, Unusual or Repetitive Habits, Socially Offensive Behavior, Withdrawal or Inattentive Behavior, and Uncooperative Behavior. The most problematic behavior in each of these categories is first identified, and then frequency is noted through use of a 5-point Likert scale. Possible responses on this scale are: "0" Never, "1" Less than once a month, "2" One to 3 times a month, "3" One to 6 times a week, "4" One to 10 times a day, and "5" One or more times an hour. After recording the frequency of the behavior, the parent then notes the intensity or severity of the problem behavior. This is done using a Likert scale with the following possible responses:

- (0) Not Serious; not a problem
- (1) Slightly Serious; a mild problem
- (2) Moderately Serious; a moderate problem
- (3) Very Serious; a severe problem

(4) Extremely Serious; a critical problem

After the intensity of the behaviors is recorded, then the eight previously mentioned problem behavior categories must be organized into four maladaptive indexes: Internalized Maladaptive Index (IMI), Asocial Maladaptive Index (AMI), Externalized Maladaptive Index (EMI), and General Maladaptive Index (GMI). Each of these indices has an average of 0 at any age, and negative scores indicate greater maladaptive behaviors.

Bruininks points out that “validity is an indication that a test functions consistent with its stated purposes” (Bruininks, Woodcock, Weatherman, & Hill, 1996, p. 137). In order to ensure the validity of these results, several studies were performed where individuals without disabilities were matched up by age, gender, and community of residence criteria. The results of the two groups (with disabilities and without disabilities) were then compared. On the Problem Behavior subscale, persons with moderate to severe retardation and those with behavior disorders showed significantly greater quantities of problem behavior than those individuals without disabilities. Therefore, social validity is within an acceptable numerical range according to the SIB-R Scales of Independent Behavior-Revised Comprehensive Manual (Bruininks et al.).

The reliability of a test is defined as the ratio of true score variance to observed score variance (Bruininks et al., 1996, p. 114). Reliability statistics used in the SIB-R were calculated for their intended use across all subscales. “The calculation of reliability statistics used data from the 2,182 individuals in the SIB-R norming sample. Reliabilities for all subscales were calculated using the split-half procedure and corrected by the



Spearman-Brown formula” (Bruininks et al., p. 119). Test-retest reliability of Maladaptive Behavior Indexes range between .83 and .88 (Bruininks et al.).

### *Procedures*

While being assigned to work with the families selected for participation in this research project, students in the School Psychology program were enrolled in a collaboration/consultation class at the time the study took place. They were also concurrently taking a functional behavior analysis course.

Graduate students in Special Education had already completed course work in functional behavior analysis. This collaboration course required students to work with parents of children with disabilities and problem behavior that had been identified specifically for this study. Graduate students underwent background checks and fingerprinting, as is required for school professionals in the state of Utah. They were also made aware of Utah’s mandatory reporting laws (in cases of observed or suspected abuse, neglect, or exploitation). Students were also educated concerning the privacy and confidentiality rights of study participants. When given their assigned families, all graduate students were required to review and sign a confidentiality agreement.

Next, the graduate students contacted their assigned families by phone and scheduled interviews. The purpose of the first interview was to get acquainted with the family. This was done by filling out a Confidential Parent Survey, administering the PCRI, and completing the SIB-R behavior protocol. On their second visit, graduate students met with parents to identify one problem behavior of their child with a disability. Parents then were introduced to Parent Handbook and were taught to collect data. This the parents did for approximately one week, until the next visit. After data were collected,

the students presented parents with Functional Behavior Assessment (FUBA) information in order to identify the function of the problem behavior, the setting, the setting events, antecedent and maintaining consequences. Parents and graduate students then together developed a behavior support plan to lower the frequency of the problem behavior and to increase the alternative behavior. It was by using the FUBA that parents chose an alternative competing behavior and positive reinforcement for that behavior. Each week, the graduate students continued to meet with the parents for instruction, discussion, and support in the development of the behavior support plans and adjustments that had to be made. Upon completion of the PBS training, 10 weeks later, the CPSE graduate students again administered the PCRI and SIB-R for post-test data and gave a Confidential Parent Survey as an exit interview. Graduate students wrote a brief summary of each visit on an anecdotal log and had the parents sign each one.

#### *Data Analysis Procedures*

Raw scores from parents' ratings on the Limit Setting and Parental Support subscales of the PCRI were converted to T scores from the pre- and post-intervention administrations. The category aligning with the child's target behavior on the Problem Behavior subscale of the SIB-R was rated by parents on a Likert scale regarding frequency (0-5) and severity (0-4). These pre- and posttest scores were compared using paired *t* tests. This is the appropriate test to measure change in pre- to post- test mean scores. There was no control group present in the study, and a quasi-random sample of participants was used. The data analysis procedure for the results related to each research question will be briefly described below.

*Question 1: What are the differences in pre and post ratings of problem (maladaptive) behavior and the behavior's frequency on the Scales of Behavior-Revised (SIB-R) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?*

To answer the first question, pre and post ratings of the SIB-R were analyzed using a paired-samples *t* test. Behaviors that each family targeted with their behavior support plans were related to their specific SIB-R categories, and data were analyzed using ratings from the target category only, rather than an average SIB-R score.

*Question 2: What are the differences in pre and post ratings of problem (maladaptive) behavior and the behavior's severity on the Scales of Behavior-Revised (SIB-R) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?*

To answer the second question, pre and post ratings of the SIB-R were analyzed using a paired-samples *t* test. Behaviors that each family targeted with their behavior support plans were related to their specific SIB-R categories, and data were analyzed using ratings from the target category only, rather than an average SIB-R score.

*Question 3: What are the differences in pre and post ratings on the Limit Setting subscale of the Parent-Child Relationship Inventory (PCRI) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?*

To answer the third question, pre- and post-test T scores of PCRI Limit Setting were analyzed using a paired-samples *t* test. The mean of the Limit Setting pre-test T scores on the 12 items was compared to the mean of the Limit Setting post-test T scores to evaluate parental Limit Setting skills.

*Question 4: What are the differences in pre and post ratings in parental support on the Support Subscale of the Parent-Child Relationship Inventory (PCRI) as rated by mothers and fathers who participate in 8-10 weeks of in-home PBS instruction?*

To answer the fourth study question, pre and post Parental Support ratings were analyzed using a paired-samples *t* test. The mean of the Parental Support pre-test T scores on the 9 items was compared to the mean of the Parental Support post-test T scores of the same items.

Results were defined as significant with a *p* value of .05 for all three research questions. All raw data were made available only to researchers, DSPD participating employees, and the participating CPSE graduate students.

## RESULTS

This section will discuss the results obtained from the statistical analysis. First, the results will be presented regarding parents' perceptions of the frequency and severity of the child's problem behavior, followed by parents' perceptions of their limit setting abilities and parental support.

### *Differences in Ratings of Problem Behavior Frequency*

To answer the first question of the study, which addressed the differences in pre and post ratings of problem behavior and the behavior's frequency, paired-samples  $t$  tests were calculated to compare the mean pretest scores of frequency of the problem behavior to the mean posttest scores of these items. The mean score on the pretest on frequency was 3.53 ( $sd = .877$ ), and the mean on the posttest was 2.95 ( $sd = 1.395$ ). This represents a significant decrease in problem behavior frequency from pretest to posttest periods ( $t(39) = 2.800, p < .05$ ) (see Figures 1-2 and Tables 2-3).

### *Differences in Ratings of Problem Behavior Severity*

To answer the second question of the study, which addressed the differences in pre and post ratings of problem behavior and the behavior's severity, paired-samples  $t$  tests were calculated to compare the mean pretest scores of severity of the problem behavior to the mean posttest scores of these items. The mean score on the pretest on severity was 2.00 ( $sd = .847$ ), and the mean on the posttest was 1.38 ( $sd = .897$ ). This represents a significant decrease in problem behavior severity from pretest to posttest periods ( $t(39) = 3.444, p < .05$ ) (see Figures 3-4 and Tables 2-3).

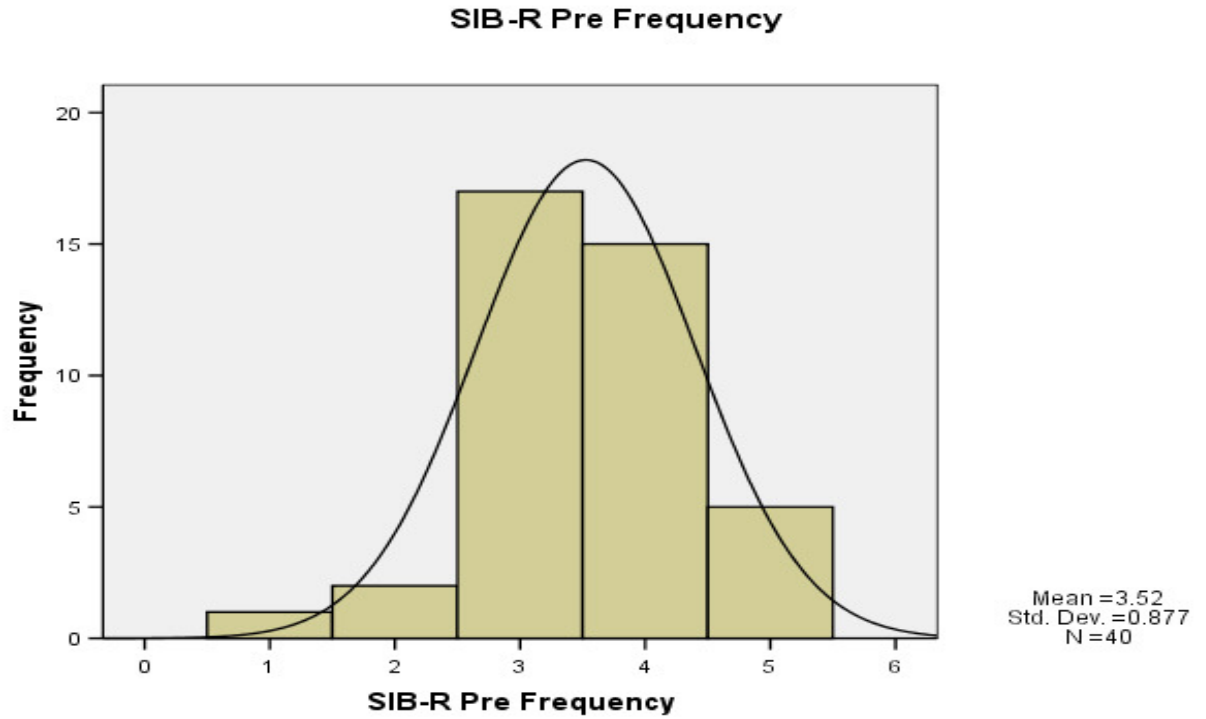


Figure 1. SIB-R pretest scores in frequency.

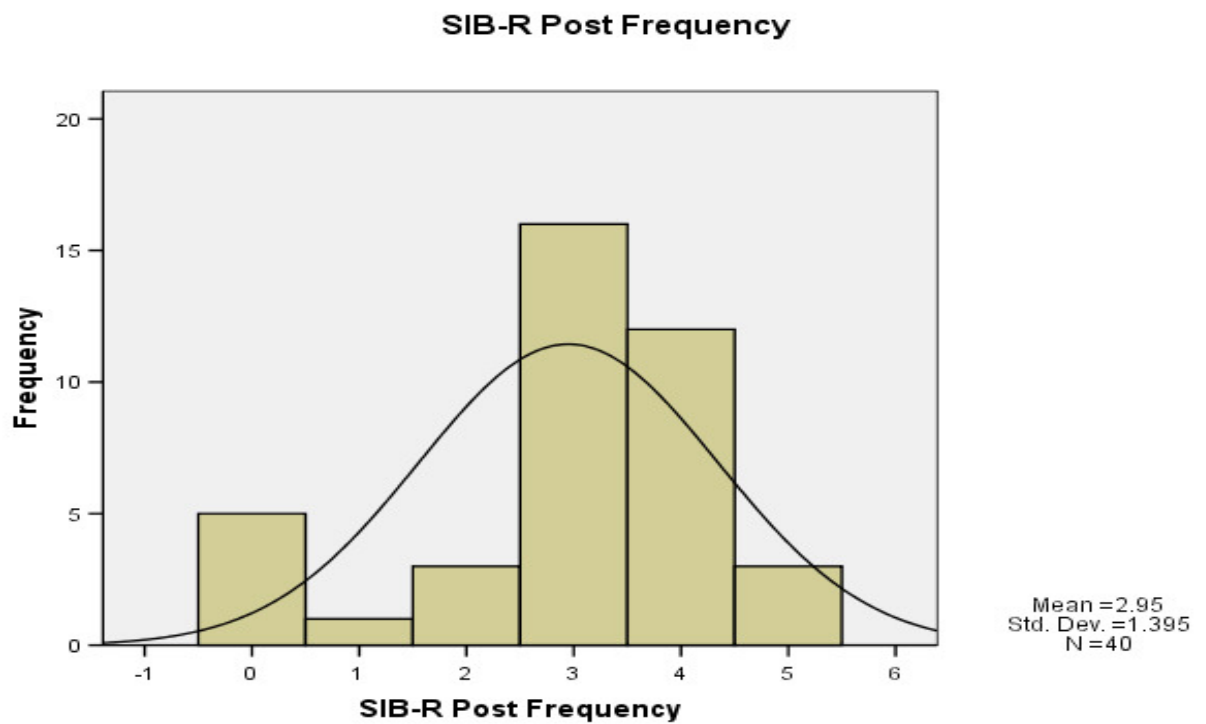


Figure 2. SIB-R posttest scores in frequency.

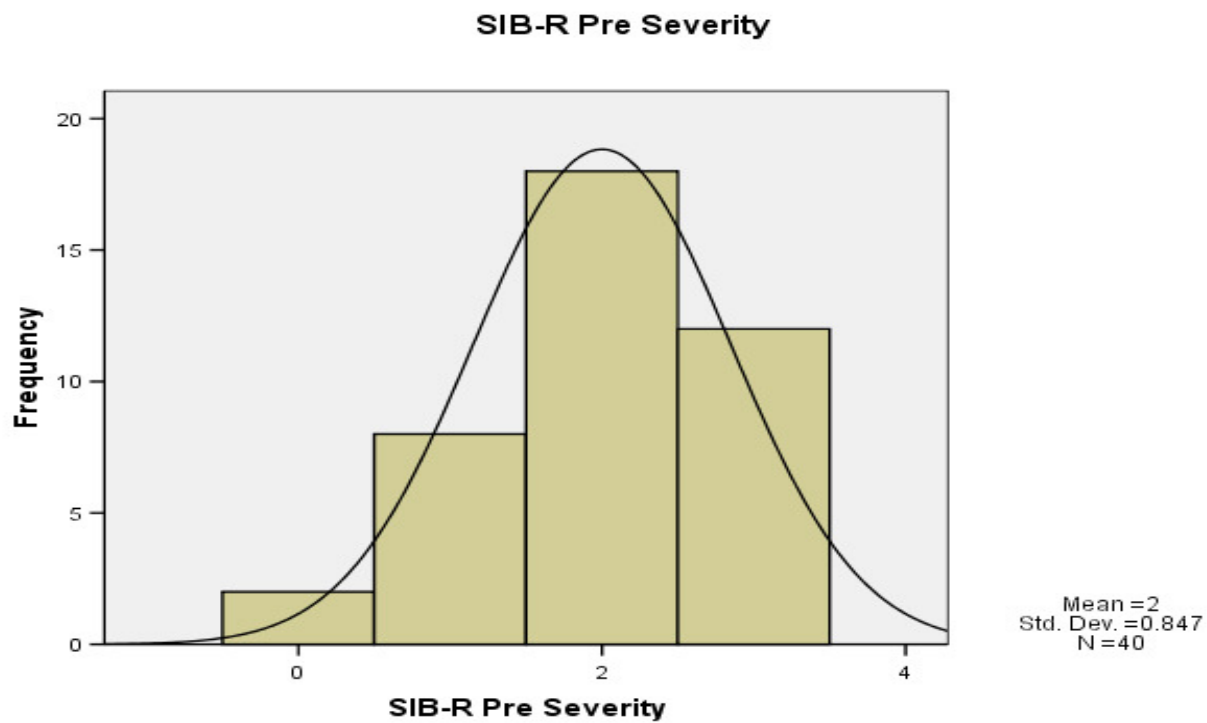


Figure 3. SIB-R pretest scores in severity.

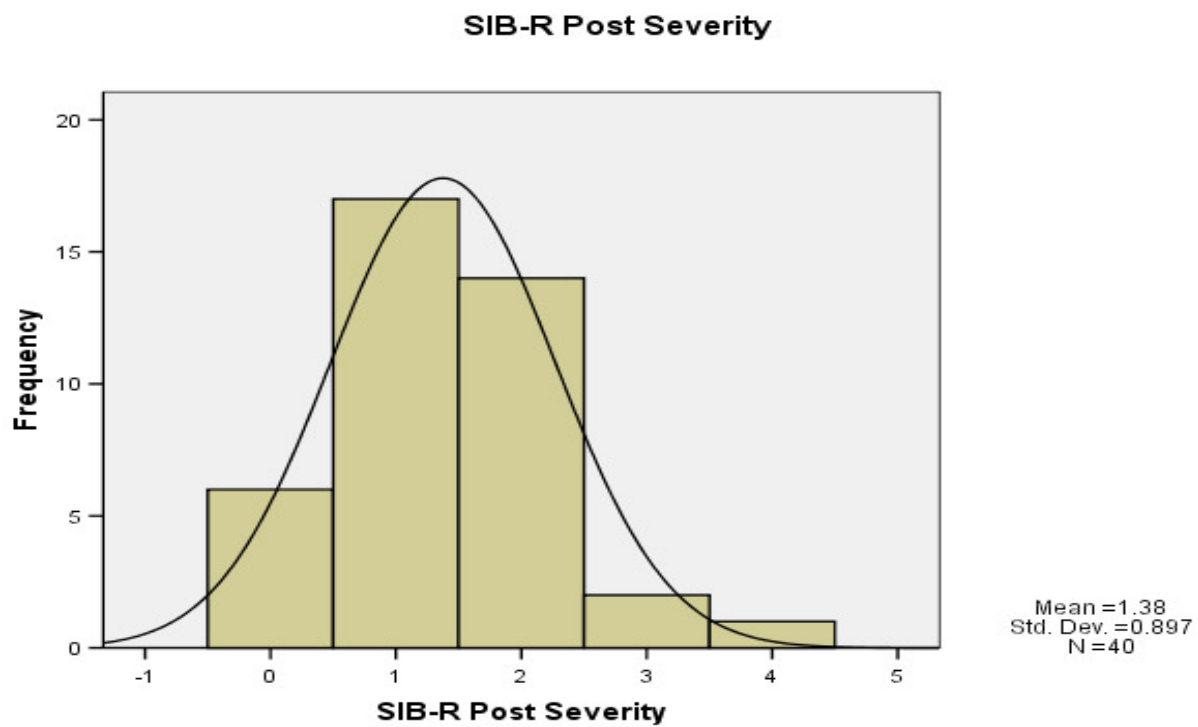


Figure 4. SIB-R posttest scores in severity.

### *Differences in Ratings of Limit Setting*

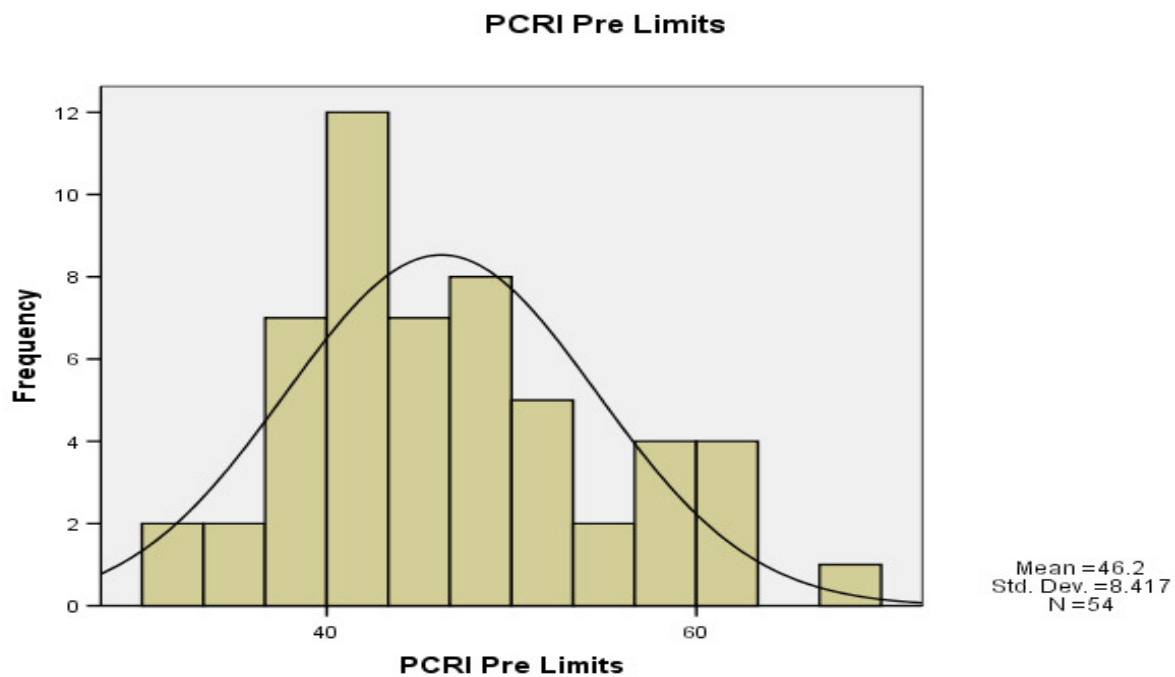
To address the third question of the study, which dealt with the differences in pre and post ratings on the Limit Setting subscale of the Parent-Child Relationship Inventory, a paired-samples  $t$  test was calculated to compare the mean pretest T scores of limit setting obtained using the Parent Child Relationship Inventory (PCRI) with the mean posttest T scores obtained with the same assessment. The mean T score on the pretest was 46.20 ( $sd = 8.417$ ), and the mean T score on the posttest was 46.83 ( $sd = 6.843$ ). These scores did not represent a significant increase in parental limit setting skills from pretest to posttest ( $t(53) = -.788, p >.05$ ) (see Figures 5-6 and Tables 2-3).

### *Differences in Ratings of Parental Support*

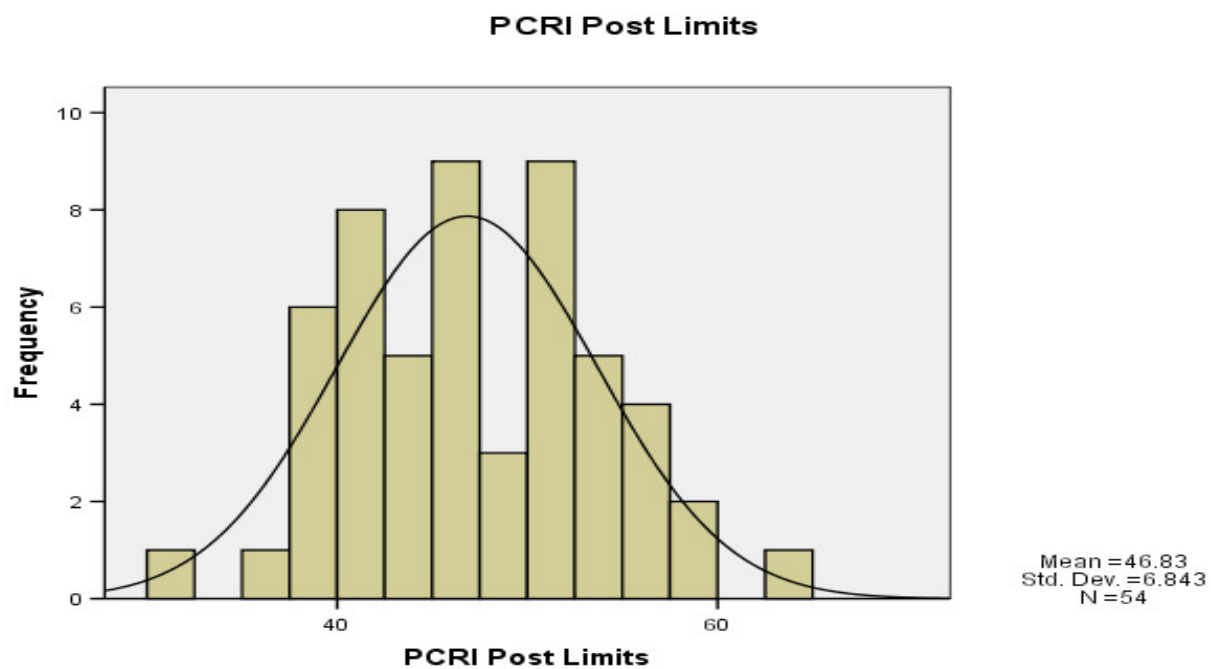
To address the fourth question of the study, which dealt with the differences in pre and post ratings in parental support on the Support Subscale of the Parent-Child Relationship Inventory, a paired-samples  $t$  test was calculated to compare the mean pretest T scores of Parental Support received using the Parent Child Relationship Inventory with the mean posttest T scores obtained with the same assessment. The mean T score on the pretest was 44.81 ( $sd = 8.497$ ), and the mean T score on the posttest was 46.72 ( $sd = 9.152$ ). These scores did not represent a significant increase in parental support received from pretest to posttest ( $t(53) = -1.710, p >.05$ ) (see Figures 7-8 and Tables 2-3).

The distribution of all data obtained in this study was reasonably normal. Six out of eight data sets followed the normal distribution. Two of the eight data sets showed some degree of notable skew (see Tables 2-3).





*Figure 5.* PCRI pretest scores in limit setting.



*Figure 6.* PCRI posttest scores in limit setting.

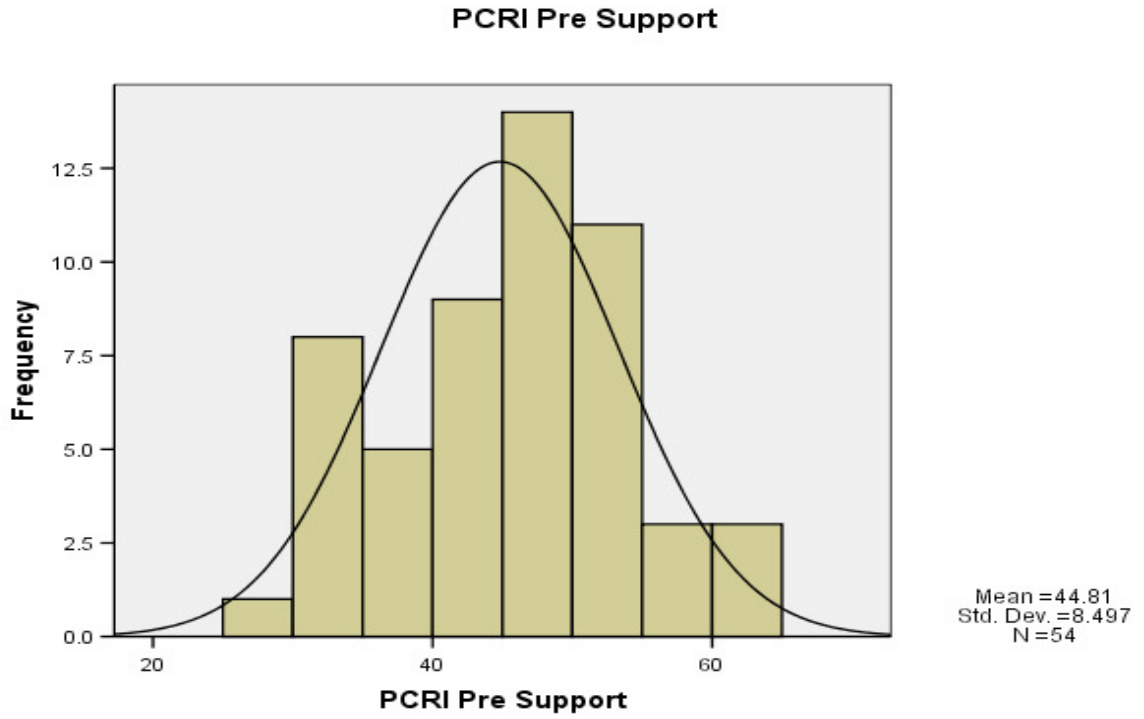


Figure 7. PCRI pretest scores in parental support.

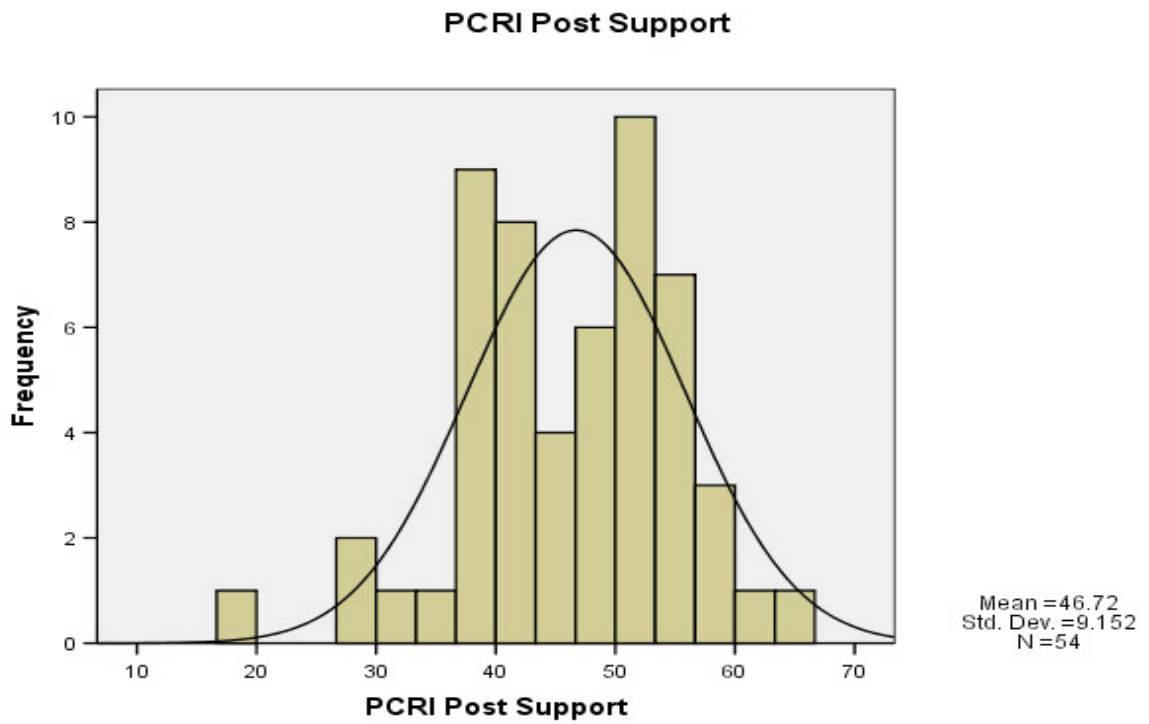


Figure 8. PCRI posttest scores in parental support.

Table 2.

*Results of PCRI and SIB-R Pre- and Posttests*

	N Valid	N Missing	Mean	Median	Std. Deviation	Skewness	Std. Error of Skewness
PCRI Pre Support	54	1	44.381	46.00	8.497	.006	.325
PCRI Post Support	54	1	46.72	47.00	9.152	-.506	.325
PCRI Pre Limit	54	1	46.20	44.00	8.417	.653	.325
PCRI Post Limit	54	1	46.83	46.00	6.843	.160	.325
SIB-R Pre Frequency	40	15	3.53	3.50	.877	-.320	.374
SIB-R Pre Severity	40	15	2.00	2.00	.847	-.532	.374
SIB-R Post Frequency	40	15	2.95	3.00	1.395	-.980	.374
SIB-R Post Severity	40	15	1.38	1.00	.897	.508	.374

Table 3.

*Paired Differences between PCRI and SIB-R Pre- and Posttests*

		Mean (SD)	Std. Error Mean	95% Confidence Interval		t	df	Sig. (2-tailed)
				Lower	Upper			
	PCRI							
Pair 1	Pre Support Post Support	-1.907 (8.2)	1.116	-4.15	.330	-1.71	53	.093
	PCRI							
Pair 2	Pre Limits Post Limits	-.630 (5.87)	.799	-2.232	.973	-.79	53	.434
	SIB-R							
Pair 3	Pre Frequency Post Frequency	.575 (1.3)	.205	.160	.990	2.8	39	.008*
	SIB-R							
Pair 4	Pre Severity Post Severity	.625 (1.15)	.181	.258	.992	3.44	39	.001*

\*p &lt; .05

## DISCUSSION

The purpose of this study was to investigate the effects of short-term in-home Positive Behavior Support training on parental perceptions of their children's challenging behaviors and of their feelings of parental support and limit setting skills. Similar to related research conducted in the past, this study provides further evidence of the importance of parents and professionals working as a team in using functional behavior assessment principles, creating and implementing behavior support plans for the family within their natural settings (Marshall & Mirenda, 2002; Buschbacher, Fox, and Clarke, 2004; Boettcher, et al., 2003). This research project involved the development of a Parent Handbook that emphasized the use of parent friendly language during Positive Behavior Support training.

The findings of this study were mixed. Two questions that were addressed in this study were whether or not the implementation of Positive Behavior Support training at home would decrease the frequency and severity of behavior problems of the child with disabilities. After the training was completed, parents reported a significant decrease in both the frequency and severity of the problem behavior of their child with disabilities. This suggests, as hypothesized, that the Positive Behavior Support training was effective during the 8-10 week period. A number of the participants whose children had previously exhibited certain disruptive, uncooperative or socially offensive behaviors even reported complete elimination of those behaviors. This significant reduction in problem behavior experienced by the participating families may be attributed to the emphasis on parent-professional collaboration that is characteristic of Positive Behavior Support. Such collaboration in the home tends to lead to a free exchange of ideas between parents and

clinicians and the eventual independence of the parents in managing their child's behavior (Dunlap et al. 2001).

Another purpose of the study was to determine whether or not Positive Behavior Support training would improve the parents' perception of their own skills in the discipline of their children. Although the data did demonstrate an increase in limit setting, the mean differences between pre- and posttest scores in this area were not sufficient to be considered statistically significant. One explanation for this may be that the short amount of time during which services were provided in this particular study was not enough for the parents to truly change their own perception of their skills as parents, despite the success met in decreasing the problem behavior. It is expected that parent confidence will rise as they continue independently to put into practice the knowledge they received from the PBS training. While a T score below 40 on any of the subscales indicates particular problems, with most pre-test scores in Limit Setting being already above 40, measurement in this area was not practically important.

Another focus of this study addressed the question of whether or not Positive Behavior Support training would improve the parents' perception of practical and emotional support received. Although the results of previous studies indicated that parental support, particularly stress relief, was directly related to the reduction of problem behavior (Baker et al., 2003), this study produced insignificant results in this area. Possibly, for the same reasons described in the previous paragraph, the data indicated that the parents may have not felt the emotional and practical support desired.

### *Limitations*

There were several aspects of this study that may limit the ability of the data to accurately represent the population of parents of children with developmental disabilities. First of all, the absence of a control group may, of course, limit the reliability of the results of this study. Also, several families did not complete the posttest protocols. These missing posttest data could potentially have contained information supporting the hypotheses of this study. Additionally, while placing a particular behavior problem under one of the eight categories included in SIB-R, the researchers often made assumptions that the parents when filling out the test, put that behavior under the same category. For obvious reasons, this may have resulted in inaccurate data obtained from the SIB-R assessments. Finally, the instruments used to collect data may not be sensitive enough for this particular study. Future studies performed should include a control group to supply a norm for data comparison.

### *Implications for Research and Practice*

Due to the insensitivity of the instruments in this study, there is a possibility of developing new assessments that would be used to more accurately obtain data.

In-home Positive Behavior Support instruction assists families in learning appropriate strategies to teach children with disabilities positive behaviors in natural environments. This project may provide incentive for special educators and school psychologists to conduct weekly training sessions for parents on dealing with their children's problem behaviors at home. DSPD personnel could collaborate with different organizations in providing parents weekly training in behavioral education. This would

allow families with children with disabilities to receive minimal support while awaiting government services.

### *Conclusion*

The model of parent-professional collaboration characteristic of Positive Behavior Support that was employed in this study has potential for decreasing behavior problems and reducing parental stress in families of children with disabilities. This study has demonstrated this program's significant effectiveness in reducing both the frequency and severity of numerous types of problem behaviors commonly displayed by children with developmental disabilities. Although the results of this particular research project were only characterized by insignificant improvements in parental perceptions of their own disciplinary skills and the support that they receive, similar studies in the future may produce more significant results in these areas if more sensitive instruments are used.



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