EVALUATING THE EFFECTIVENESS OF THE CORE CONTENT OF THE INCREDALE YEARS WITH AND WITHOUT VISUAL PERFORMANCE FEEDBACK FOR PARENTS OF CHILDREN WITH AUTISM

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EVALUATING THE EFFECTIVENESS OF THE CORE CONTENT OF THE INCREDIBLE YEARS WITH AND WITHOUT VISUAL PERFORMANCE FEEDBACK FOR PARENTS OF CHILDREN WITH AUTISM

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DEDICATION

This is dedicated to my husband, Greg Majkrzak II, my best friend and teammate in life, for his support, patience and sacrifice on this long journey. Thank you for approaching each new challenge as an adventure and always making me laugh along the way.

This is also dedicated to my parents who taught me the value of hard work and made sacrifices to enable me to have opportunities.
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Evaluating the Effectiveness of the Core Content of the Incredible Years with and without Visual Performance Feedback for Parents of Children with Autism

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Abstract

Many children with autism display externalizing behavior due to challenges they face in the areas of communication, social skills and repetitive behavior or restricted interests. Parents have reported that it is difficult to know how to address these behaviors. Parent training programs have been found to increase parents’ skills and decrease child externalizing behavior. The purpose of this study was to evaluate the effectiveness of the core content of The Incredible Years parent training program with and without Visual Performance Feedback in: a) increasing parent skills and b) decreasing child externalizing behavior. The secondary purpose was to assess the extent to which parents found the interventions socially valid.

Using a multiple baseline design across parent-child dyads, data were collected on parent behaviors (use of clear commands, unclear commands, specific praise, non-specific praise and descriptive play statements) and child behaviors (compliance, prompted compliance, non-compliance, on-task/appropriate behavior and externalizing behaviors). Phases included baseline, parent training and feedback.

Results indicated that when the parent variables of clear commands, praise and descriptive play statements were combined, all parents made mild increases in their use of those skills during each phase. However, there was variability in specific variables across parents and phases. On the Eyberg Child Behavior Inventory, all parents reported
decreases in child externalizing behavior from pre to post intervention. However, there was variability in specific variables across children and phases. Interpretation of these results is provided along with study limitations and future directions for research.
CHAPTER I
INTRODUCTION AND REVIEW OF THE LITERATURE

Overview

The purpose of this study was to evaluate the effectiveness of the core content of the Incredible Years (IY) program (Webster-Stratton, 2008) in a one-on-one format for parents of children with autism. The secondary purpose was to evaluate the program with Visual Performance Feedback (VPF; Reinke, Lewis-Palmer & Martin, 2007). The first part of this chapter will begin by providing an overview of challenging behavior and parent training as an intervention. The second part of this chapter provides a review of the related literature, including externalizing behavior of children with autism, a review of parent training programs and the evidence base for IY (Webster-Stratton) and VPF (Reinke, et al.). Finally, corresponding research questions will be presented. (Appendix A includes a glossary.)

Statement of Problem

Challenges Associated with Autism

The prevalence of autism is at a historical high. The Center for Disease Control and Prevention (2007) estimates the rate of autism to be as high as one in 166 children. This is an increase from previous estimates of two to five individuals for every 10,000 (American Psychiatric Association [DSM-IV], 1994). To receive a diagnosis of Autistic Disorder, a child must have delays in three specific areas: communication, social interaction, and restricted repetitive behaviors and interests and the delays need to have been present before the age of three (DSM-IV, 1994).
One of the most challenging areas for parents of young children with autism is in the area of externalizing behaviors (Gadow, DeVincent, Pomeroy, & Azizian, 2004; Rao & Beidel, 2009). Parents have reported experiencing difficulty handling these externalizing behaviors that their children often display (Papageorgiou & Kalyva, 2010). Externalizing behavior broadly refers to a range of behaviors including aggression toward others, self-injury, property destruction, defiance, yelling, hyperactivity or impulsivity. Research also uses the terms behavior problems and disruptive behavior disorders. For clarity, this paper will use the term externalizing behaviors to encompass all these aforementioned terms commonly used in the literature. Fifty to seventy percent of children with autism exhibit externalizing behaviors, often as a manifestation of impaired social and communication function (Gadow, et al.). When left untreated, externalizing behaviors can negatively impact long term outcomes for the child, as well as the family (Eaves & Ho, 2008; Matson, Mahan, Hess, Fodstad & Neal, 2010).

Negative Outcomes Associated with Externalizing Behaviors

Because externalizing behaviors are not unique to young children with autism, this area has been researched across populations. As a result, research is consistent in the summation that externalizing behavior in childhood is problematic for long term outcomes of children (Loeber & Farrington, 2000) and society (Guevara, Mandell, Rostain, Zhao, & Hadley, 2003). These behaviors restrict their learning (Gadow, et al., 2004), ability to form peer relationships (Koegel, Koegel, Frea, & Fredeen, 2001), contribute to family stress (Baker-Ericzen, Brookman-Frazee & Stahmer, 2005; Bouma & Schweitzer, 1990) and limit family functioning (Herring, et al., 2006; Montes & Halterman, 2008). Externalizing behaviors have been linked to negative outcomes at
school, in the community and within families. Specifically, children with externalizing behaviors in early childhood are at risk for peer rejection (Hinshaw & Melnick, 1995) later difficulties in school, school dropout, delinquency and antisocial behavior (Loeber & Farrington, 2000). They also incur greater health care expenses than their counterparts without behavioral concerns (Guevara, et al.). In addition, children with externalizing behaviors contribute to parental feelings of stress and can limit mothers’ ability to access social support (Suarez & Baker, 1997).

Less is known about the specific long term effects of externalizing behavior in children with autism. However, research indicates that externalizing behavior in children with autism is persistent across the lifespan (Eaves & Ho, 2008; Matson, et al., 2010). The short term effects of externalizing behavior in autism have been better documented and include contributing to parent stress (Baker-Ericzen, et al., 2005) and negative parent mental health outcomes (Montes & Halterman, 2007). Given its effectiveness across all populations, autism included, parent training has been an intervention of choice.

**Parent Training as an Intervention**

Parent training globally refers to programming that targets parents as the learners who will later become the interventionist for increasing child skills or decreasing child externalizing behavior. Parent training has been identified as an effective tool for increasing skills in children with autism (e.g., Charlop & Trasowech, 1991; Mahoney & Perales, 2003) and decreasing child externalizing behavior (e.g., Webster-Stratton, 1998). Currently, however, most parent training programs are designed and implemented to target either parents of children with autism or parents of children with externalizing behavior despite the fact that the both groups may have similar issues specific to
challenging behavior (Brookman-Frazee, Stahmer, Baker-Ericzen, & Tsai, 2006). Recent literature has suggested “cross-fertilization” of the two fields in order to expand research and practice related to parent training (Brookman-Frazee, et al.).

**Review of Related Literature**

This section will initially review the relation between parenting practices and externalizing behavior in children, followed by a discussion of externalizing behavior specific to children with autism. Next, an overview of how parent training has addressed externalizing behavior for children with autism and children without autism will be provided. Finally, IY (Webster-Stratton, 2008) parent training program will be specifically discussed with attention to the research base and the potential next directions for adapting the program for families of children with autism.

**Relation between Parenting Practices and Externalizing Behavior in Children**

There are many contributors to the development of externalizing behaviors in childhood (Deater-Deckard, Dodge, Bates, & Pettit, 1998). One of the main contributing factors to childhood behavior problems is parenting practices (Campbell, 1995). Specifically, inconsistent discipline, poor delivery of commands, ineffective use of punishment and low levels of quality parent-child interactions are associated with externalizing behavior in children (Campbell). Highly critical and hostile parenting is also associated with externalizing behavior in children (Baumrind, Larzelere, & Owens, 2010; Patterson & Stouthamer-Loeber, 1984).

In one study (Eiden, Edwards & Leonard, 2007), low maternal warmth was related to low self-regulation at three years of age, which predicted externalizing behavior in kindergarten. A similar pattern was found by Harnish, Dodge and Valente
Children with mothers experiencing symptoms of depression had elevated levels of externalizing behaviors when they had poor quality mother-child interactions as well. The opposite was also true; children who experienced quality mother-child interactions despite maternal depressive symptoms had low levels of externalizing behavior. Both of these research studies support the concept that positive mother-child interactions could partially mediate the effects of mother depression on child externalizing behavior.

**Externalizing Behavior in Children with Autism**

Autism is marked by deficits in three areas: communication, social skills and restricted interests/repetitive behaviors (DSM-IV, 1994). Children with autism display delays in their communication skills characterized by lack of initiating conversations and a failure to respond to others’ initiations (Jones & Schwartz, 2009). In addition, children with autism have difficulty with social interactions. For some children, there may be an avoidance of social situations all together, while others have a desire to interact with others, but their lack of skills make interactions awkward or conflicted (National Research Council, 2001). Finally, children with autism have restricted interests or repetitive behaviors, which can further isolate them from typical peer interactions (Strain & Schwartz, 2001). Children with autism are also likely to display deficits in their adaptive behavior skills (Matson, 2007), which can limit their independence.

For some children with autism, these skill deficits are related to externalizing behavior. In a cluster analysis characterizing emotional and behavioral categories of children with autism, the researchers found that 35% of the children were rated by their parents as having behavioral concerns (Lecavalier, 2006). Other research has identified rates of externalizing behavior for children with autism to be as high as 50-70% (Gadow, 1995).
et al., 2004). Behaviors include tantrums, physical violence, screaming/crying/yelling and aggression toward others (Hellings, et. al., 2005). These behaviors are often associated with the specific deficits characteristic of an autism diagnosis. In a study conducting functional assessments of behavior on 23 children, researchers found that males with autism often display externalizing behavior in order to gain access to (or maintain access to) desired objects (often used to engage in repetitive behaviors) or to avoid sensory stimuli (Reese, Richman, Belmont & Morse, 2005). This is in contrast to children without autism who often display externalizing behavior in order to gain adult attention or to avoid demands placed on them by adults (Reese, et al.). It is not surprising that children with autism are less likely than other children to engage in externalizing behavior to gain the attention of others given their delays in social skills (and sometimes disinterest in social interactions). Similarly, other research has characterized the aggressive behavior of children with autism as being reactive to the environment instead of reactive to other people (Farmer & Aman, 2011). Further, without intervention externalizing behavior in individuals with autism has been found to be consistent across the lifespan (Eaves & Ho, 2008; Matson, et al., 2010).

While autism is not caused by parenting behaviors, the same parenting practices that contribute to the development and maintenance of externalizing behavior in other children are relevant for parents of children with autism (Brookman-Frazee, et al., 2006). Parents can teach their children needed skills, adapt the environment to promote success and react to behaviors in a way that minimizes problem behavior and increases adaptive behavior. In fact, parent training programs designed to target externalizing behavior in
children with autism have focused on these areas (e.g., Frea & Hepburn, 1999; Moes & Frea, 2002).

**Parent Training for Children with Autism**

Much of the parent training research for autism focuses on training parents to implement interventions targeting skill development such as language skills (e.g., Charlop-Christy & Carpenter, 2000; Charlop & Trasowech, 1991) and improving child social/emotional functioning (e.g., Mahoney & Perales, 2003) or both (e.g., Koegel, Symon & Koegel, 2002). However, there is an emerging body of literature indicating that parent training for parents of children with autism is effective for reducing externalizing behavior and improving parent outcomes. Most interventions are based in applied behavior analysis. Below is a review of parent training programs for parents of children with autism and externalizing behavior.

One study involved training parents to conduct functional assessments on their child’s behavior in order to teach alternate behaviors (Frea & Hepburn, 1999). This study was a controlled case study, but showed promise for decreasing externalizing behavior in children through parent training. During a series of five meetings, two different mothers were taught functional assessment techniques. One of the mothers also received a 30 minute training session on using prompts. Both mothers were successful in identifying the function of their child’s externalizing behavior, choosing an appropriate intervention and carrying it out. Both children decreased their externalizing behavior and increased their use of the functional replacement behavior. However, this program was not evaluated using an experimental method.
Another study used a multiple base line across participants design to assess child outcomes associated with collaborating with parents to create highly individualized behavior plans for their children (Koegel, Stiebel & Koegel, 1998). Clinicians provided parents with prompts for carrying out the behavior plans. All three parents successfully carried out the behavior plans and their children showed decreases in externalizing behavior and increases in appropriate behavior.

Similarly, Moes and Frea (2002) evaluated a parent training method that involved providing parents with behavior intervention plans that were created within the context of the family’s routines and with environmental factors in mind. After identifying behavioral functions, parents were taught functional communication training techniques. Each parent training was individualized based on the families’: goals, concerns, resources, abilities, routines and patterns of family interaction. Using a multiple base line design, across participants, the researchers found that all three children in the study showed decreases in their externalizing behavior after the parent intervention. Both of these studies (Koegel, et al., 1998; Moes & Frea) were highly individualized making replication for other clinicians difficult.

The following two studies used similar techniques for training parents. Using a multiple base line design across eight participants, Moran and Whitman (1991) assessed a training program that trained parents to use prompts and rewards using instruction, watching a video of an adult working with children who had autism and practicing the techniques learned with the trainer. The trainer also modeled the techniques by using them to teach the parents. During training phase, mothers increased their use of
appropriate prompts and use of rewards. Children showed an increase in on-task behavior and toy play with a decrease in noncompliance.

Smith and Lerman (1999) used a multiple baseline across participants and multiple element design to compare guided compliance (physically guiding the child through a task) or high probability instructional sequences (giving commands the child was likely to comply with before giving a command a child was not likely to comply with). Participants included two parent-child dyads. Training techniques used to train parents included instruction, handouts, modeling and practice. Guided compliance was found to be more effective than high-probability instructional sequences, though parents were taught to successfully implement both and reported satisfaction with both techniques.

One study taught parents an approach different than the other programs. Using a multiple-baseline across participants design, Singh, et al. (2006) found that children decreased their aggression and non-compliance after their parents were trained to use mindfulness techniques. Mindfulness was defined as “…having a clear, calm mind that is focused on the present moment in a nonjudgmental way” (p. 170). Parents could choose how to interact with their child without adhering strictly to an antecedent or contingency management approach.

In addition to reducing externalizing behavior in children, parent training programs can also improve outcomes for parents. Pivotal Response Training (PRT; Koegel & Koegel, 1988) in particular, has been shown to have positive outcomes for parents. PRT (Koegel & Koegel) is an intervention that targets pivotal behaviors related to motivation and responding to multiple cues in order to improve social and
communication skills in children with autism. In a repeated reversals study, three parents were taught how to implement PRT (Koegel, et al., 1999) with their own children (Brookman-Frazee, 2004). The study compared a model where parents and the professional formed a partnership for training to a model where the professional directed the training. The parent-professional partnership model was associated with reduced parent stress.

Koegel, et al., (1996) used an experimental group design to compare outcomes for a group receiving training in PRT (Koegel, et al., 1999) to a group receiving training in Individual Target Behavior (ITB; Koegel, Schreibman, Britten, Burke & O’Neill, 1982). Parents were trained through modeling and feedback. The study found that the group of parents trained to implement PRT (Koegel, et al., 1999) had lower stress levels post training than the group trained to implement ITB (Koegel, et al., 1982).

Unlike parent training for children with only externalizing behavior, parent training for parents of children with autism tend to be individualized (Brookman-Frazee, et al., 2006) making them difficult to widely disseminate or deliver in a group format. With the exception of PRT (Koegel, et al., 1999), most programs are not manualized, which limits the ability for professionals to consistently provide or evaluate evidence based trainings. Drawing from the literature on parent training for reducing externalizing behavior could be beneficial in expanding research and practice related to parent training for parents of children with autism (Brookman-Frazee, et al.).

**Parent Training to Reduce Externalizing Behavior in Children**

Parent training is an effective intervention for decreasing externalizing behavior in children. A number of studies have evaluated the effectiveness of parent training
programs. For example, one study compared child outcomes after parents of children with externalizing behaviors participated in the Parenting Plus Programme (Sharry & Fitzpatrick, 1997), which uses video modeling to help parents address externalizing behavior in their children, versus a control group (Behan, Fitzpatrick, Sharry, Carr, & Waldron, 2001). The intervention group attained parenting goals at higher rates than control group, reported fewer externalizing behaviors in their children, improved parent-child interactions, maintained parenting goals at 5 month follow up and had twice as many children move to non-clinical range of behavior. Another study (Funderbunk, et al., 1998) found that children whose parents participated in a Parent-Child Interaction Therapy (PCIT; Bell & Eyberg, 2002), an intervention that coaches parents to use authoritative parenting during interactions with their children, maintained their behavior change in the home setting at 12 and 18 month follow-ups.

Studies have also found generalization to school settings. In a similar study evaluating PCIT (Bell & Eyberg, 2002), behavior generalization to the school setting was evaluated for children ages two to seven year olds (McNeil, Eyberg, Eisenstadt, Newcomb, & Funderbunk, 1991). Teachers of children in the intervention group reported fewer disruptive behaviors post-treatment than the teachers of students in the control groups. Likewise, in a study that utilized a school-level, matched random assignment (intervention group vs. control group) design, the same results were found (McTaggart, & Sanders, 2003). The overall results from 78 schools indicated that teachers at intervention schools reported lower rates of disruptive behaviors than teachers at control schools. The behavior change was maintained at the six month follow-up. Further, child behavior at control schools actually got worse.
Even when less intensive versions of the parent trainings were implemented, child externalizing behavior decreased, but not to the same degree as with the more intense versions of the interventions. For example, in a study evaluating different intensities of the Triple P-Positive Parenting Program (Triple P; Sanders, 1999), positive outcomes were found for all versions, although there were some differences among the outcomes (Sanders, Markie-Dadds, Tully & Bor, 2000). The purpose of this study was to compare 3 versions of Triple P (enhanced, standard and self-directed). Three hundred five preschoolers were randomly assigned to one of three treatment groups or wait list. The greatest effects were found for the enhanced group, followed by the standard group, then self-directed. Children whose parents attended the enhanced program and the standard program had the lowest levels of externalizing behavior at the one year follow-up when compared to the self-directed group and the control group. However, the self-directed group did show some maintained behavior change. In another study, Nixon, Sweeney, Erickson and Touyz (2004) found that when comparing the effectiveness of PCIT (Bell & Eyberg, 2002), abbreviated PCIT and a waitlist control group, post-treatment outcomes (decrease in oppositional child behaviors, reduced parent stress and reduced coercive parenting) were maintained for both groups at the 1 year and 2 year follow-up.

Parent training designed to decrease externalizing behaviors in children has also shown direct benefits for parents. In a large-scale study of 589 mothers who participated in the Triple P program (Sanders, 1999), positive outcomes were found from pre to post intervention (Cann, Rogers & Matthews, 2003). Participants showed a decrease in dysfunctional parenting practices, increase in parenting self-efficacy and confidence and a decrease in parenting anxiety, depression and conflict. In addition, parents reported a
high need for the intervention and high levels of satisfaction with the Triple P (Sanders, 1999) program. Similarly, in a study evaluating the “bud in ear” method of parent training (a method whereby parents are coached by professionals through an ear bud on how to interact with their children) parents showed improvement in their discipline practices from pre to post intervention (Hutchings, Appleton, Smith, Lane & Nash, 2002). Further, mothers who had symptoms of depression and participated in the intense version of the intervention showed significantly improved depression levels at post intervention. Similar outcomes were found in a study evaluating the effectiveness of PCIT (Schuhmann, Foote, Eyberg & Boggs, 1998). Sixty four families were randomly assigned to a treatment or waitlist group. Parents in the treatment group had more positive parent-child interactions post treatment compared to the parents in the waitlist group. Parents in the treatment group also reported reduced levels of stress, greater internal locus of control and high levels of satisfaction with the program.

There have also been some differences in outcomes based on the type of program implemented. In a study comparing outcomes of a parent management training group to a parent group with a cognitive approach, Costin, Lichte, Hill-Smith, Vance, and Luk, (2004) found that both groups showed positive outcomes. However, the parent management training group reported greater reduction in child externalizing behavior and the parent group with the cognitive approach (that focused on stress reduction and problem solving) reported greater reduction in stress levels.

Overall, Triple P (Sanders, 1999) and PCIT (Bell & Eyberg, 2002) stand out in the literature as two effective intervention programs for reducing externalizing behavior in children. However, they do have a couple of limitations. Triple P (Sanders) has
mostly been studied in Australia and needs to be further researched in the United States to verify its cultural relevance. PCIT (Bell & Eyberg) is an intervention that requires one to two therapists to work individually with each parent-child dyad, making it time-intensive for therapists. Further, while research has begun to compare different types of parent training programs, less is known about the effectiveness of specific parent training programs across different populations. Despite the fact that many children with autism display externalizing behavior (Gadow, et al., 2004), parent training for parents of children with autism have been developed and evaluated separately from the parent training targeting parents of children with only externalizing behavior (Brookman-Frazee, et al., 2006). Because parent training programs for children with autism have tended to be individualized and are mostly delivered in a one-on-one format (Schultz, Schmidt & Stichter, in press), exploring other parent training programs that could potentially be delivered to more than one parent at a time could be advantageous to the field. The Incredible Years (IY; Webster-Stratton, 2008) is parent training program that addresses these limitations.

**Incredible Years**

**Overview.** IY is a curriculum-based parent training program that has been well researched and found to be effective for reducing externalizing behavior in children (e.g., Gardner, Burton & Kilmes, 2006; Taylor, Schmidt, Pepler and Hodgins, 1998; Webster-Stratton, 1994,1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, Reid, & Hammond, 2004). IY is based in social learning theory. It targets parents of two to eight year olds showing early signs of conduct disorder. Parent sessions are held weekly for one and a half to two hours for up to 22 sessions and cover relationship building, praise,
commands, limit setting, routines and rules and timeout as a consequence. Child behaviors targeted in IY include decreasing disruptive behavior and increasing prosocial behavior. Behavior change is often measured with the Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) and through behavior observation. The ECBI has a clinical cut-off score, which makes it a useful measure for determining if externalizing behavior is clinically significant. Target parent behaviors for the IY program are behavior management, problem solving, harsh parenting, parent-child interactions and parent attitudes. Video modeling, role playing, group discussions, support network building, homework and weekly phone calls are used to teach parents the skills related to positive parent-child interactions and discipline. The IY curriculum covers each concept in a progression whereby each unit builds on the last. These units are consistent with research on effective interventions for children with autism. Following is a discussion of the how the IY program is consistent with research on effective interventions for children with autism.

**IY for autism.** Although IY was not originally created for parent of children with autism, the core content is consistent with other research on addressing the needs of children with autism. The program begins with the importance of the parent-child relationship, focusing on child-directed play. Parents are encouraged to set aside time each day specifically for playing with their children. They are taught to use descriptive play statements during child-directed play. This is similar to PRT (Koegel, et al., 1999) which has used child-directed play as motivation for building language and increasing social interactions. Next, the curriculum focuses on the importance of praise to increase positive behavior and build the parent-child relationship. Videos are used to model
praise, and parents have the opportunity to practice using praise during sessions. Using incentives or rewards for promoting positive behavior in their children is also discussed. Similarly, parent training programs for autism also often target praise and other forms of reinforcement as key areas for parents to focus on to change behavior and teach new skills (e.g., Moran & Whitman, 1991). After spending several sessions on relationship building and promoting positive behavior, the curriculum shifts to limit setting and creating rules and routines. Part of this includes using schedules or routines and giving clear commands to increase the likelihood that children will follow directions. Similarly, autism interventions also focus on antecedent manipulation in order to support children in successfully complying with adult instructions (e.g., Smith & Lerman, 1999).

After covering strategies for promoting positive behavior and preventing externalizing behavior, the curriculum focuses on responding to externalizing behavior. These sessions involve learning how to ignore attention-seeking behaviors and effectively use timeout for behaviors that should not be ignored. These units may be less relevant for children with autism. Interventions for autism typically utilize functional behavior assessments to determine behavior functions and identify appropriate consequence for problem behaviors (e.g., Frea & Hepburn, 1999). However, IY does point out that ignoring and timeout are intended for attention-seeking behaviors. Therefore these units are not inappropriate for families of children with autism, but they may not address all problem behaviors that families face.

The teaching methods IY (Webster-Stratton, 2008) uses for training parents are also consistent with parent training for children with autism. Key training techniques utilized in IY include video modeling, practice and discussion of how parents can use the
techniques at home. Similarly, Moran and Whitman (1991) used video modeling and live modeling for teaching parents how to use prompts and rewards with their children and found that mothers increased their use of these techniques and children increased their on-task behavior and decreased their noncompliance. Other research (Smith & Lerman, 1999) used instruction, handouts, modeling and practice to train parents and found this combination to be effective for training parents to use new techniques. However, these parent training programs for autism did not use manuals or collect fidelity data on how parents were trained, making it difficult for professionals to implement the interventions and researchers to replicate the research on their effectiveness. Further, without clear guidelines for treatment integrity, it is difficult for researchers to follow the trajectory of research phases set forth by Smith, et al., (2007) for scaling up research. Using IY (Webster-Stratton, 2008) with parents who have children with autism, could provide consistency in programming, allowing researchers to identify specific techniques and content that maximize outcomes for parents and children.

**Research evaluating IY.** IY (Webster-Stratton, 2008) has been well researched (Gardner, et al., 2006; Taylor, et al., 1998; Webster-Stratton, 1994, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, et al., 2004). It has been shown to be effective for increasing positive parenting practices and reducing child externalizing behavior in multiple randomized control trials (Webster-Stratton, 1994; 1998; Webster-Stratton & Hammond, 1997). Following is a review of the research evaluating the effectiveness of IY.

Specific outcomes associated with this program are illustrated by an early evaluation of the program. Webster-Stratton (1998) compared mothers who participated
in the program to mothers in a control group. The study randomly assigned 394 mothers at the Head Start center level. Mothers who participated in the program were observed to have less harsh discipline, give fewer commands or make critical comments and be more competent in parenting than mothers in the control group. Children whose mothers participated in the program were viewed as more socially competent and having fewer disruptive behaviors by their teachers. However, the parent trainings were offered in the context of Head Start, which provides supports to families. It is not clear if this intervention would be as successful as a stand-alone program. The control group also had a higher level of individuals of minority status than the treatment group. A strength of the study is that the intervention targeted families with low incomes.

Another study (Webster-Stratton & Hammond, 1997) compared the following IY (Webster-Stratton, 2008) groups: child training (CT), parent training (PT) and CT+PT with a control group. Ninety-seven children without disabilities, aged four to seven, were randomly assigned to one of the four groups. All three groups showed greater improvements when compared to the control group. The CT and the CT+PT had significant improvements in child problem solving skills and conflict management skills. The PT and CT+PT had significant improvements in parent-child interactions at home. All behavior changes maintained at the one year follow-up. However, the control group could not be assessed at follow-up, as they were eventually offered the training. Also, the study did not have enough participants to analyze the characteristics of non-responders.

In a replication study, Webster-Stratton, Reid and Hammond (2001) assessed the IY (Webster-Stratton, 2008) program with 272 families across 14 Head Start centers and 36 classrooms. Centers were randomly assigned to the intervention group (received
parent training and teacher training) or the control group (received no intervention). Outcomes were assessed by parent report, teacher report and direct observation of children with their parents and teachers. Variables for parent outcomes were combined into one construct and variables for child outcomes were combined into another construct. Results indicated that parents who received the intervention increased their positive parenting practices compared to parents who were in the control group. Further, parents maintained their changes at the one-year follow-up. Results also indicated that children in the intervention group reduced their externalizing behavior compared to the control group and maintained this change at the one year follow-up.

Webster-Stratton, et al. (2004) compared the following IY programs: parent training (PT), parent training plus teacher training (PT+TT), child training (CT), child training plus teacher training (CT+TT), PT+CT+TT and a control group. 159 families of children aged four to eight, without disabilities, were randomly assigned to one of the six conditions. All combinations resulted in children displaying fewer problem behaviors. When compared to the other groups, children in the child training groups had greater levels of prosocial behavior with peers. Mothers in the parent training groups had higher levels of positive parenting than the control group. Both teacher training groups resulted in better teacher behavior management skills. However, the sample was mostly white, middle-class and each group had a small n. One strength of this study is that it assessed different combinations of interventions to determine which impacted individuals the most.

In another study assessing the effects of combining IY programs, Reid, Webster-Stratton and Hammond (2007) compared families who received child training at school
(CR), parent training in addition to the child training (PT+CR) and a control group (CON). A total of 252 families completed the full two year study beginning when their children were in kindergarten. Approximately 12% of the children had developmental disabilities. Changes in parent and child outcomes were assessed with parent report, teacher report and direct observation. Observations revealed that parents in the PT+CR condition reduced their use of harsh parenting, and this change was significant when compared to parents in the CR and CON conditions. Parent reports of parents in the PT+CR condition indicated that children significantly reduced their externalizing behavior compared to parent reports from parents in the CR or CON conditions. However, direct observation revealed that children did not reduce their externalizing behavior at home. This may be due in part to the fact that two-thirds of the children had low levels of observed externalizing behavior during baseline.

Reid, Webster-Stratton and Baydar (2004) assessed the moderators involved in the outcomes associated with the intervention and engagement in the intervention. Using random assignment (at the classroom level) 882 Head Start children were assigned to the treatment or control group. The mothers who had perceptions of their child’s behavior as being a problem were most likely to attend. Children whose mothers completed the parent training reported lower levels of problem behavior. This study looked at factors related to engagement, which is important for targeting individuals for program participation.

Reid, Webster-Stratton and Beauchaine (2001) used a sample of 634 families (across 23 Head Start Centers) drawn from two previous studies to assess the outcomes associated with IY across racial groups (Caucasian, African American, Asian and
Hispanic). The study used a quasi-experimental- matched random assignment to experimental or control group. Mothers who participated in the parent training improved in the following areas: gave fewer commands, made more positive comments, were less critical and more consistent, were more involved in school activities and used more effective discipline than mothers in the control group. These changes (except for school involvement) maintained one year post treatment. Children whose mothers participated in the parent training had decreased problem behavior, which maintain at the one year follow-up. All changes were consistent across racial groups. Limitations included: there were small numbers of mothers in some of the racial groups and there were many post-hoc tests. However, high levels of satisfaction were reported across treatment groups.

In another study, Baydar, Reid and Webster-Stratton (2003) conducted a randomly assigned group comparison study of 882 mothers of Head Start children. The purpose of the study was to understand how psychological risk factors influence mothers’ parenting, participation in parent training and how they benefit from parent training. They found that the mothers who participated in the IY group increased their positive/supportive parenting and decreased their negative parenting. Mothers who were most at risk were engaged and not only benefitted, but some benefitted more than parents who were less at risk. The design was quasi-experimental, so the findings are not as generalizable as if an experimental design were used. However, the study attempted to assess if mothers experiencing multiple risk factors would benefit from a parent education program.

In a study of IY (Webster-Stratton, 2008) conducted in the UK, researchers conducted a randomized control trial (Gardner, et al., 2006). Seventy-six families from
nine sites were randomly assigned to the intervention and control groups. Children were aged two to nine and did not have any significant disabilities. Parent report and observation revealed that children reduced their problem behavior, improved their play skills and parents improved their positive parenting practices. This was a particularly strong study because it was a randomized control trial conducted independently of any of the original IY researchers. In addition, it utilized parent report and observation for measuring change.

Another study compared IY (Webster-Stratton, 2008) to traditional therapy in an applied setting. Taylor, et al. (1998) assessed feasibility and effectiveness of the IY program in a community-based clinic serving families. One hundred and eight families with children aged three to eight, were assigned to the IY (Webster-Stratton) treatment group, regular clinic therapeutic services or a wait-list control group. Both treatments were found to decrease child externalizing behavior based on parent report. The IY (Webster-Stratton) treatment group reported greater decreases in externalizing behavior of their children than the group receiving typical therapy. In addition, parents in the IY (Webster-Stratton) group were more satisfied with their intervention than the group receiving typical therapy. Two limitations of this study were that the study only assessed short-term outcomes and did not utilize behavior observation as a measure.

**IY for other populations.** Some studies have also investigated the effectiveness of IY (Webster-Stratton, 2008) for families who have children experiencing challenges besides externalizing behavior. One study evaluated the effectiveness of IY (Webster-Stratton) for child depressive symptoms (Webster-Stratton & Herman, 2008). One hundred and eighty-one parents were randomly assigned to an intervention group or
control group. Children in the study were between the ages of three and eight and did not have any disabilities. Children whose parents participated in the parent training were rated as lower on internalizing symptoms by their mothers than the children in the control group. Limitations of this study included outside therapies/interventions of the control group were not accounted for, child internalizing symptoms were based solely on parent report and the children had co-occurring conduct issues.

Another study assessed the extent to which inattention, hyperactivity and impulsivity were related to the outcomes of training for children with conduct problems (Hartman, Stage & Webster-Stratton, 2003). HLM was used to determine the relation between child characteristics and program outcomes. Participants included 81 mothers of four to seven year old boys. Children with attention problems (in addition to conduct problems) made improvements post intervention. This study was done with a sample consisting mostly of white boys. This study attempted to analyze the effectiveness of IY (Webster-Stratton) for children who have co-occurring conduct problems and attention difficulties.

Finally, one recent study (McIntyre, 2008), evaluated the effectiveness of IY (Webster-Stratton, 2008) with for parents of children with developmental disabilities. Twenty-five parents of children ages two to five years old participated in 12 group sessions. Vineland scores for children ranged from 45 to 85 with a mean of 64 indicating moderately low adaptive behavior to a mild deficit in adaptive behavior. Half of the participants in the group had a diagnosis of autism. Using a pre-test/post-test design, results indicated that parents were observed to decrease their inappropriate behavior during play sessions. Parent reported no significant reduction in child externalizing
behaviors. However, observations revealed decreases in child externalizing behavior. This study utilized a pre-post design, which does not experimentally evaluate outcomes. Therefore, results should be interpreted with caution. Nevertheless, the main purpose of the study was to evaluate the feasibility of delivering the intervention for parents of children with developmental disabilities and assessing parents’ satisfaction with the intervention. The study found positive outcomes for both.

The evidence of the effectiveness of IY (Webster-Stratton, 2008) for addressing child externalizing behavior and parenting practices has been well documented (e.g., Gardner, et al., 2006; Taylor, et al., 1998; Webster-Stratton, 1994,1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, et al, 2004). A future direction for the program may be to bolster effects by adding a feedback component to increase generalization and maintenance of effects.

**Adding Feedback to the Incredible Years**

While IY (Webster-Stratton, 2008) has shown positive results for parents and children, there are a few limitations to group training programs in general. Most parent training takes place in settings outside the family’s home (e.g. Webster-Stratton, 1998; Webster-Stratton & Hammond, 1997). Yet the concerning behaviors leading parents to seek parent training often happen in the home setting (e.g. Costin, et al., 2004; Webster-Stratton, 1998). While group trainings necessitate meeting outside the home, some level of support inside the home could be advantageous to parents in the generalization of their skills (Brookman-Frazee, et al., 2006). Specifically, adding an in-home observation and feedback component to the IY (Webster-Stratton) could address these concerns. Feedback can take a few different forms including video feedback (replaying videos of
parents using the techniques taught), verbal feedback (verbally explaining to parents what they did well and how they need to improve) and visual feedback (providing parents with a handout showing their data). Following are summaries of ways feedback has been used with parents.

**Feedback with parents.** Phaneuf and McIntyre (2007) evaluated the effects of adding a feedback component to the IY (Webster-Stratton, 2008). The study used a multiple baseline design to assess the outcomes associated with providing four parents with individualized video feedback in addition to participation in the group intervention. Mothers of children who were two to four years old, attended IY (Webster-Stratton) parent sessions for 11 weeks. Their children were identified as having developmental disabilities, which is not a population of children who are typically targeted by the IY (Webster-Stratton) program. Mothers who were attending the group intervention were randomly chosen to receive the video feedback in addition to the group intervention. Video feedback sessions were introduced at different times for each parent (consistent with a multiple baseline design). Mothers received one to three feedback sessions that lasted 35 to 45 minutes. Thirty minute sessions were videotaped in the home and then a feedback session took place one week later. The therapist viewed the video with the parent and stopped the tape when inappropriate behaviors were being displayed. The mothers had to come up with better alternatives and practice them with the therapist. If the mother showed appropriate behaviors in the video, the therapist praised her. Results indicated that mothers decreased their inappropriate behaviors following the feedback sessions regardless of if they were showing much improvement from the group intervention alone, suggesting that the video feedback improved outcomes beyond what
the group intervention provided. However, video feedback involves having access to the appropriate technology and can be time consuming, which may be a barrier for some professionals working with families.

Another study used verbal feedback in their intervention package. Lerman, Swiezy, Perkins-Parks & Roane (2000) provided individualized parent training for three parents of children with developmental disabilities and externalizing behavior. Using a multiple baseline design across behaviors, the researchers assessed the effectiveness of providing written and verbal instructions for parents with and without feedback. Parents were first observed with no intervention during baseline. Then parents were provided with written and verbal instructions for using specific strategies such as praise and prompts. Acquisition of these skills varied across parents and skills. All parents increased their accuracy with some skills. In the third phase, parents were provided with verbal feedback immediately following observation sessions. The verbal feedback led to all parents meeting training criteria for at least one skill. These studies show promise for the effectiveness of feedback with parents. Performance feedback has been more widely studied with training teachers, though. Following is discussion of performance feedback that has been utilized with teachers.

Feedback with teachers. Several studies have noted the effectiveness of feedback with teachers. One study assessed the impact of Visual Performance Feedback (VPF) on teachers’ use of behavior specific praise and found that teachers increased their use of behavior specific praise when presented with VPF (Reinke, Lewis-Palmer & Martin, 2007). In this study, VPF consisted of a graph depicting the amount of behavior-specific praise the teachers used each day. Outcomes were assessed with a multiple
baseline design. Similarly, in a study utilizing VPF in combination with the Classroom Checkup (CCU; Reinke, et al., 2007) as interventions for increasing teacher praise and decreasing student externalizing behavior, teachers increased their use of praise most after the implementation of the VPF (Reinke, Lewis-Palmer & Merrell, 2008). The initial intervention of the CCU alone only had minimal effects, but when the VPF component was added the effects increased.

Other research used an experimental group design was used to evaluate three types of performance feedback for providing behavioral consultation to teachers (Noell, Witt, Slider, Connell, Gatti, et al., 2005). All groups followed the same process for evaluating students, deciding on an intervention and planning for implementation of the intervention. The groups differed in the type of weekly feedback they received from the consultant. One group received brief meetings focused on discussing to what extent the intervention was being implemented. The second group received the same weekly meeting with the addition of a “commitment emphasis” which involved specific discussions surrounding the importance of the intervention and steps for carrying it out. The third group received performance feedback in the form of graphs showing their implementation behaviors and the students’ progress. Results indicated that the group who received performance feedback in the form of a graph had the highest levels of treatment integrity. The group that received traditional weekly consultation decreased their treatment integrity, while the group that received commitment emphasis had higher levels of treatment integrity than the weekly consultation group and lower treatment integrity than the feedback group. Perhaps the most notable finding is that teachers in all three groups perceived that they were implementing their interventions with integrity.
Another study strategically provided tiered levels of feedback to teachers in order to increase use of praise in their classrooms (Myers, Simonsen & Sugai, 2011). Four teachers participated in a multiple baseline across participants study. All teachers received training on the importance of praise, how to implement praise effectively (it should be specific and contingent and at a rate of 6 per 15 minutes) and the importance of using more praise statements than negative statements (4:1 ratio). If teachers did not meet criteria, they moved to tier 2, which involved weekly feedback on their performance, as well as goal setting and contingent praise for their performance from the researcher. Teachers who did not meet criteria in this phase moved to tier 3. Tier 3 involved direct instruction on the skills, feedback after every observation, providing email and hard copies of the data to teachers and praise from the researcher as appropriate. Results revealed that one teacher met criteria during tier 2. Another teacher met one of the two criteria during tier 2. The two remaining teachers met criteria after receiving tier 3 feedback. This study suggests that teachers may need varying intensities of feedback in order to learn new skills.

A simpler format for feedback was evaluated by Hemmeter, Snyder, Kinder and Artman (2011), whereby feedback was provided to four preschool teachers via email. The study used a multiple probe design to assess changes in teachers’ use of descriptive praise in their classrooms. Teachers received one-on-one training in the use of descriptive play. Then teachers were observed two to three times per week and provided with feedback on their performance and suggestions for improvement via email after each observation. Results revealed that all teachers increased their use of descriptive praise after the training and feedback were implemented. However, the training and feedback
were not evaluated separately. Therefore, it is impossible to know if the training, feedback or combination of both affected teacher behavior. Mixed results were found for changes in externalizing behavior of children. For two of the teachers, child externalizing behavior decreased concurrent with their increase in descriptive praise. For one teacher, child externalizing behavior did not decrease. For the fourth teacher, externalizing behavior decreased after the introduction of classroom visuals as preventative strategies.

Another study evaluated the effectiveness of immediate verbal feedback (Codding, Feinberg, Dunn and Pace, 2005). Using a multiple baseline across five teacher-child dyads, the effects of verbal feedback on teachers’ implementation of behavior support plans was evaluated. Students chosen for the study had brain injuries and externalizing behavior. All teachers received training in applied behavior analysis prior to the start of the study. Teachers also received specific training on their students’ behavior support plans. During the feedback phase, teachers received praise for following components of the behavior support plan and constructive feedback related to the components they were not appropriately implementing. Feedback was provided every other week on the same day as the observation. Results indicated that all teachers improved their implementation of students’ behavior support plans.

**Summary.** Performance feedback, in the forms of verbal feedback, visual feedback and video feedback, shows promise for increasing the integrity of intervention implementation for teachers and parents, which in turn is linked to better outcomes for children. Video feedback has been found to be effective for increasing positive outcomes for parents beyond what was learned in training (Phaneuf & McIntyre, 2007). However,
it is a time-intensive intervention, which also requires access to video technology. Verbal feedback with parents, while less time intensive and more cost effective than video feedback, yielded mixed results in a study by Lerman et al., (2000). Visual feedback is an alternative method of feedback that is less time intensive and more cost effective than video feedback, but may provide a higher level of support to parents than verbal feedback, has been found to be effective when used with teachers (Noell, et al., 2005; Reinke, et al., 2007; Reinke, et al., 2008). Assessing the effectiveness of VPF (Reinke, et al., 2007) with parents could prove useful because it could add a low cost option when choosing feedback methods to use with parents.

**Conclusion**

Children with autism often display externalizing behavior (Gadow, et al., 2004). Externalizing behavior in autism has been shown to be consistent across the lifespan, and the long term effects can be negative for the child, as well as the family (Eaves & Ho, 2008; Matson, et al., 2010). The development of externalizing behavior in autism is often related to specific challenges children with autism face, including communication deficits, social skill challenges and repetitive behaviors or restricted interests (e.g., Reese, et al., 2005). Parent training is one particular intervention that has shown positive outcomes related to reducing externalizing behavior in children with autism and increased skills in parents (e.g., Frea & Hepburn, 1999; Moes & Frea, 2002). However, most parent training programs for parents of children with autism are highly individualized and/or delivered in a one-on-one format making it difficult to widely disseminate these interventions (Schultz, et al., in press). The IY (Webster-Stratton, 2008) parent training program follows a curriculum and has been shown to be effective in
reducing externalizing behaviors in children without autism (e.g., Webster-Stratton, 2998) and could be a potential program for parents of children with autism. In addition, the use of VPF (Reinke, et al., 2007) could potentially be a salient addition to support the contextually relevant needs of parents in relation to their children’s behavior.

Statement of Purpose

The purpose of this study was to evaluate the effectiveness of IY (Webster-Stratton, 2008) in a one on one format with and without VPF (Reinke, et al., 2007) for parents of children with autism.

Research Questions

1. Does training in the core content of IY increase the use of positive parenting practices for parents of children with autism?
2. Does VPF after training in IY increase the use of positive parenting practices for parents of children with autism?
3. Does parent training in the core content of IY decrease externalizing behavior in children with autism?
4. Does providing parents with VPF after receiving training in the core content of IY decrease externalizing behavior in children with autism?
5. Is the core content of IY with VPF socially valid for parents of children with autism?
CHAPTER II

METHOD

Overview

Using a multiple-baseline across participants design, the effectiveness of the core content of The Incredible Years (IY; Webster-Stratton, 2008) program for parents of children autism was evaluated. The IY (Webster-Stratton) program was evaluated in a one on one format with and without Visual Performance Feedback (VPF; Reinke, et al., 2007). Following is a description of the method and procedures used for this study. Participants, recruitment and setting will be discussed, followed by the independent and dependent variables. Next the design will be described, including specific information about the different phases and data collection procedures. Finally details related to the data analysis procedures for behavior observations, as well as social validity assessments will be provided.

Participants and Recruitment

Recruitment

Participants included four children ages four to six with diagnoses of autism and co-occurring externalizing behaviors, as well as their parents. They were recruited through a local agency that provides case management and funding for individuals with developmental disabilities and an interdisciplinary autism clinic. Professionals in these two settings were each provided with an eligibility screening checklist (see Appendix B) and/or parent recruitment flier (see Appendix C). With the exception of the diagnostic criteria, screen criteria were consistent with the IY (Webster-Stratton, 2008) program.
Screening criteria included the following. (a) Child was between four and eight years old at the time of recruitment. (b) Child had a diagnosis of autism based on current diagnostic records. For inclusion in the study, children needed to have their diagnosis based on the Autism Diagnostic Interview- Revised (ADI-R; Rutter, et al., 2003) or the Autism Diagnostic Observation Schedule (ADOS; Lord, et al., 1999), which are considered the gold standard diagnostic tools by the field (Santangelo & Tsatsanis, 2005). If the child had been diagnosed through another method, and fit other inclusion criteria, the child’s parents were administered the ADI-R to verify diagnosis. (c) The child’s parent had contacted the referring professional to report externalizing behaviors in need of intervention in the past six months, which included one or more of the following: aggression toward others, self-injury, property destruction or defiance. (d) The child had a Vineland Adaptive Behavior Scales score between 45 and 85 (Sparrow, Balla & Cicchetti, 1984). Professionals were asked to contact parents of children who met eligibility to get permission for the researcher to contact them. They were provided with a brief script that gave an overview of the intervention and research project (see Appendix D). Once the professionals had verbal permission for the researcher to contact parents, the researcher called interested families to explain the intervention and research project in more detail. If the parents were interested in participating, the researcher set up a time to meet with the family in order to administer necessary assessments for eligibility. During the meeting, the researcher explained the consent form to parents and obtained their written consent in order to proceed (see Appendix E). All parents were administered the Eyberg Child Behavior Inventory (ECBI; Eyberg & Pincus, 1999) in order to characterize the severity of the child’s behavior and obtain a pre-intervention
score. If needed, the ADI-R was administered during a second visit to verify autism diagnosis. Parents were also administered the Vineland if they had not recently completed one. There were no additional eligibility criteria for parents. Parents were informed whether or not their child met eligibility criteria by phone once all of the assessments were scored. For those eligible, the researcher answered any questions the parents had and set up a schedule for behavior observations and parent training.

**Participant Characteristics**

Participants in this study were four males ages 4 years and 3 months to 6 years and 2 months and their mothers. All of the children were referred because of reported non-compliance and tantruming when asked to complete non-preferred tasks. All children had at least some expressive language and were ambulatory.

Scores were obtained from the Vineland Adaptive Behavior Scales to determine overall adaptive functioning (Sparrow, et al., 1984). The Vineland assesses four domains: communication, daily living, socialization and motor skill. Combined, the four domains make up the total score which can be converted to a standard score (100 is average). For participants in this study, Vineland scores ranged from 55 to 76 with an average score of 64, indicating adaptive behavior functioning approximately two to three standard deviations below average.

Scores were also obtained from the ECBI to determine the severity of the externalizing behavior (Eyberg & Pincus, 1999). The ECBI has two subscales: intensity and problem. The intensity subscale is based on parent report of how severe the problem behavior is. The problem subscale is based on parent report of how problematic the parent believes the problem behavior is. ECBI t scores on the intensity subscale ranged
from 54 to 79 with a mean of 64. Although the clinical cut-off is for significant externalizing behavior is 60, participants with slightly lower scores were allowed in the study due to an emergent pattern of non-applicable questions. For two of the children, a cluster of questions related to misbehavior in social interactions received low scores because the children did not participate in social interactions. Therefore, their overall scores were below the clinical cut-off. However, these children were still included as part of the study because their behavior in other situations was problematic for families and the fact that they did not regularly participate in social interactions warranted intervention. Further, one study comparing children with autism to other children, found that children with autism were rated lower on the ECBI than their counterparts with behavior disorders (Dumas, Wolf, Fisman & Culligan, 1991). Specific participant characteristics are described below.

Devon was six years and two months old when the current study began. He had a Vineland score of 55 (mild deficit in adaptive behavior) and an ECBI score of 57. He was verbal, but engaged in high levels of echolalia. He also needed prompts to express himself using his verbal language. He received special education services at his elementary school through his local school district. He had an aide at a school and received speech therapy, occupational therapy and physical therapy each week. Ashton was four years and three months when the current study began. He had a Vineland score of 57 (mild deficit in adaptive behavior) and an ECBI score of 54. He was also verbal, but engaged in high levels of echolalia. He needed prompts to express himself using verbal language, as well. Ashton attended Early Childhood Special Education for half days through his local school district. He received speech therapy and occupational
therapy once per week. Benjamin was six years and two months when the current study began. He had a Vineland score of 66 (mild deficit in adaptive behavior) and an ECBI score of 67. He was verbal and did not engage in echolalia. He received special education services at his elementary school through his local school district. He also received speech therapy at school. Caden was five years and seven months when the current study began. He had a Vineland score of 76 (moderately low adaptive behavior) and an ECBI score of 79. He was verbal and did not engage in echolalia. He was home schooled by his mother.

There were no exclusionary criteria for parents. However, basic demographic information was collected consistent with similar studies (e.g., Singh, et al., 2006; Smith & Lerman, 1999). Table 1 outlines the child characteristics and Table 2 outlines the parent characteristics:

Table 1

*Child Characteristics*

<table>
<thead>
<tr>
<th>Child</th>
<th>Age</th>
<th>Sex</th>
<th>Vineland Score</th>
<th>ECBI Score</th>
<th>Referring Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
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<td>6y 2m</td>
<td>male</td>
<td>55</td>
<td>57</td>
<td>Non-compliance</td>
</tr>
<tr>
<td>Ashton</td>
<td>4y 3m</td>
<td>male</td>
<td>57</td>
<td>54</td>
<td>Non-compliance Tantruming</td>
</tr>
<tr>
<td>Benjamin</td>
<td>6y 2m</td>
<td>male</td>
<td>66</td>
<td>67</td>
<td>Non-compliance Tantruming</td>
</tr>
<tr>
<td>Caden</td>
<td>5y 7m</td>
<td>male</td>
<td>76</td>
<td>79</td>
<td>Non-compliance Tantruming</td>
</tr>
</tbody>
</table>
Table 2

*Parent Characteristics*

<table>
<thead>
<tr>
<th>Child</th>
<th>Target Parent</th>
<th>Highest Level of Education</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>Mother</td>
<td>Master’s degree</td>
<td>Teacher</td>
</tr>
<tr>
<td>Ashton</td>
<td>Mother</td>
<td>Bachelor’s degree</td>
<td>Stay at home parent</td>
</tr>
<tr>
<td>Benjamin</td>
<td>Mother</td>
<td>Some college</td>
<td>Child care provider</td>
</tr>
<tr>
<td>Caden</td>
<td>Mother</td>
<td>Some college</td>
<td>Stay at home parent</td>
</tr>
</tbody>
</table>

**Setting and Materials**

The training and observations took place in the families’ homes. During training, parents received handouts from the IY (Webster-Stratton, 2008) curriculum and DVDs from the curriculum were also viewed. During the VPF phase, parents received a feedback handout each session.

**Independent Variables**

The independent variables were parent training and visual performance feedback. Both are described in detail below.

**Parent Training**

The parent training program for this study was comprised of six sessions based on the core concepts of the Incredible Years: play, praise/incentives, routines, limit setting, ignoring and time out (Webster-Stratton & Reid, 2003). The parent training sessions were conducted in a one-on-one format. During each session, the following topics were covered: play, praise/incentives, routines, limit setting, ignoring and time out. One topic
was covered per session. Each topic is described below in Table 3 in more detail, as defined by the IY manual, adapted to condense the program to six sessions.
Table 3

*Descriptions of Each IY Topic*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Play</td>
<td>Play is used to build the parent-child relationship. Through play, parents can promote their child’s self-esteem. Play also shows children that their parents care and are interested in their activities. Important skills in the play unit include child-directed play and descriptive play. Child-directed play is play that is lead by the child with the parent participating under the child’s direction. Descriptive play is play in which the parent narrates the child’s activities to show interest and encourage continued play.</td>
</tr>
<tr>
<td>Praise</td>
<td>Praise is used to increase child behaviors that parents want to see more of. Praise can also increase child self-esteem and build the parent-child relationship. Important skills in the praise unit include identifying behaviors that parents want to see, using behavior specific praise, giving praise immediately following the behavior and reducing criticism.</td>
</tr>
<tr>
<td>Routines</td>
<td>Routines are used to create predictability and ease transitions. Common routines discussed include morning routines, bedtime routines and separation routines. Important skills covered in this area include letting the child help develop the routine (as developmentally appropriate) and creating visuals to support the routine.</td>
</tr>
<tr>
<td>Limit Setting</td>
<td>Limit setting involves setting clear and consistent expectations for children. An important skill in this area involves giving clear commands in order to support successful follow through from children.</td>
</tr>
<tr>
<td>Ignoring, Distracting, Redirecting</td>
<td>Ignoring is taught as a skill for reducing attention-seeking misbehavior. It involves not paying attention to children when they are engaging in non-harmful disruptive behaviors such as whining, protesting and yelling. Ignoring should not be used if children are engaging in behavior that could harm themselves or others. Distracting and redirecting are also covered.</td>
</tr>
<tr>
<td>Time out</td>
<td>Time out is a strategy used as a consequence for aggressive behavior and non-compliance. The time out strategy has specific steps to be followed each time it is implemented to ensure consistency.</td>
</tr>
</tbody>
</table>
The primary investigator, who has been trained by a certified group leader during a semester long graduate level course and is a Certified Family Life Educator (CFLE) conducted the parent training sessions. In addition, the primary investigator led several parent training groups under the supervision of a certified group leader before beginning this study. The children did not receive intervention while the parent training was taking place. However, if parents needed childcare in order to participate in the training session, a volunteer graduate student played with the child(ren) in an adjacent room or area during the training to ensure that the parent could fully participate in the training. The procedures used during the parent training sessions were consistent with those described in the IY (Webster-Stratton, 2008) manual. Notable exceptions include: the parents received the training in a one on one training format as opposed to participating in a group, only select videos were viewed during the session and the sessions only lasted 30 minutes instead of two hours. The reason the program was condensed is because IY (Webster-Stratton) is typically delivered in a group format with some of the activities being group discussion and small group activities. Without a group some of the activities were not possible and there was not a need for two hours of intervention. In addition, the purpose of this study was to evaluate the core content, not the overall program. Therefore, key components were used and sessions were 30 minutes. During the sessions, the parent trainer provided information about each topic and engaged the parent in discussion surrounding that topic. Key points were taken directly from the manual for each topic. Video model vignettes, as identified by the manual, were shown to exemplify the week’s topic and further the discussion. In addition, parents participated in role plays
with the parent trainer to practice the techniques learned. The sequence of these activities is outlined for each unit in the IY manual.

**Treatment Integrity**

The IY program provides “Leader Checklists” for group facilitators to use as a guide for implementing with fidelity. Because the sessions were held in a one on one format, many of the items were not applicable (such as working with a partner or having a group discussion). Therefore, these forms were used as a guide for identifying key topics for each session. Below Table 4 outlines topics and activities covered in each session.
Table 4

*Parent Training Topics and Activities*

<table>
<thead>
<tr>
<th>Session</th>
<th>Key Topics Covered</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Play</strong></td>
<td>The value of play:</td>
<td>videos modeling child-directed play</td>
</tr>
<tr>
<td></td>
<td>● builds child’s self esteem</td>
<td>practice child-directed play</td>
</tr>
<tr>
<td></td>
<td>● builds the parent-child relationship</td>
<td>brainstorm play activities</td>
</tr>
<tr>
<td></td>
<td>● promotes child’s prosocial behavior</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Praise/Incentives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The importance of behavior-specific praise:</td>
<td>videos modeling praise</td>
</tr>
<tr>
<td></td>
<td>● increases the effectiveness of praise</td>
<td>brainstorm praise words and other rewards</td>
</tr>
<tr>
<td></td>
<td>● promotes language development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The importance of praising small success:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● builds self esteem</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● promotes child learning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Routines</td>
<td>videos modeling routines</td>
</tr>
<tr>
<td></td>
<td>The importance of predictable schedules:</td>
<td>brainstorm ideas for home routine</td>
</tr>
<tr>
<td></td>
<td>● increases child’s success with completing tasks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● reduces problem behaviors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limit setting</td>
<td>videos modeling clear commands</td>
</tr>
<tr>
<td></td>
<td>Elements of effective commands:</td>
<td>practice using clear commands</td>
</tr>
<tr>
<td></td>
<td>● give only necessary commands</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● commands need to be short and clear</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The importance of using clear commands:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● increases child’s compliance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ignoring, Distracting &amp; Redirecting</td>
<td>videos modeling ignoring</td>
</tr>
<tr>
<td></td>
<td>Behaviors to ignore:</td>
<td>brainstorm behaviors to ignore</td>
</tr>
<tr>
<td></td>
<td>● attention seeking behaviors that are not a safety concern</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distract and redirect to prevent problem behaviors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Out</td>
<td>brainstorm when timeout is appropriate</td>
</tr>
<tr>
<td></td>
<td>When to use timeout:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● sparingly, as a consequence to problem behaviors that are not an attempt to escape or avoid a task</td>
<td></td>
</tr>
<tr>
<td></td>
<td>How to use timeout:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>● follow the handout for consistency</td>
<td></td>
</tr>
</tbody>
</table>
Visual Performance Feedback

Visual Performance Feedback (VPF) in this study was similar to the VPF procedure in Reinke, et al. (2007). During the VPF phase, parents received a one page sheet with two simple graphs depicting the behavioral data for three target variables: parent’s use of clear commands, child’s compliance and parent’s use of praise. One graph contained the data for parent use of clear commands and child independent compliance. The other graph contained data for parent use of behavior-specific praise. Observational data was entered into a laptop to create graphs showing the changes in parent and child behavior across all previous sessions (see Appendix F). The parent trainer briefly described what was depicted in the graphs and the parents were allowed to keep the handout. (Detailed information about when families received VPF is explained below in the design section.)

Dependent Variables

Data were collected on both parent and child behaviors. Behaviors were chosen to be consistent with other IY research (e.g. Webster-Stratton, et al., 2004) and operational definitions were developed based on the IY curriculum (Webster-Stratton, 2008). Throughout the study, videotaped observations were conducted. Behavioral data were collected during a five minute play session involving the child and the parent and a five minute session of a child completing a task as directed by their parent (see Table 7 for descriptions of each child’s task). Data were collected continuously while viewing the videos using the Multi-Option Observation System for Experimental Studies (MOOSES) on hand held computers (Tapp, Wehby, & Ellis, 1995). This program allows
for coding of multiple behaviors at the same time. (More details on data collection are included in the data analysis section.)

**Parent Behaviors**

Data were collected on the following parent behaviors: clear commands, unclear commands, behavior-specific praise, non-specific praise and descriptive play statements. These behaviors were chosen because they are targeted by the IY program and increasing clear commands, behavior-specific praise and descriptive play statements are especially likely to prevent the occurrence of externalizing behavior. That is, they are not responses to inappropriate (such as timeout or ignoring), but instead are preventative. Specific praise was the phase change variable (more details about phase change decisions are included in the design and phases section below.) Operational definitions of parent behaviors are as follows:
Table 5

Operational Definitions of Parent Behaviors

<table>
<thead>
<tr>
<th>Parent Behaviors</th>
<th>Operational Definitions</th>
<th>Example</th>
<th>Non-example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear commands</td>
<td>directives that specify what a child is to do without including extra information</td>
<td>“Please pick up your truck.”</td>
<td>“Go clean your room because it has gotten messy.” Or “Can you pick up your truck?”</td>
</tr>
<tr>
<td>Unclear commands</td>
<td>directives that are unclear, include unnecessary information or tell the child what not to do, are in the form of questions, or are gestural directives</td>
<td>“Stop yelling!” or “It’s time to get ready for bed.”</td>
<td>“Put your toys in the basket.”</td>
</tr>
<tr>
<td>Behavior-specific praise</td>
<td>positive comments in regard to a displayed desired behavior given immediately following the behavior</td>
<td>“I like your calm body.”</td>
<td>“Good job!” or “I like that you had a calm body earlier today.”</td>
</tr>
<tr>
<td>Non-specific praise</td>
<td>Positive comments that do not indicate the behavior being praised</td>
<td>“Good work!”</td>
<td>“I like your calm body.”</td>
</tr>
<tr>
<td>Descriptive Play Statements</td>
<td>Statements that describe what the child is doing during play sessions</td>
<td>“You are pushing the car.”</td>
<td>“What color is the car?”</td>
</tr>
</tbody>
</table>

Child Behaviors

Child behaviors included frequency of the following behaviors: child compliance with directives, prompted compliance and non-compliance. Duration data were collected for the following child behaviors: on-task/appropriate behavior, off-task, yelling or whining, property destruction, aggression toward others and aggression toward self.
Only one duration behavior was recorded at any given time. Therefore, a hierarchy was created, in the event that a child was displaying more than one duration behavior in order to capture the most severe behavior being displayed. The default code was on-task/appropriate. Other behaviors took precedence over one another in order of rank as follows (with behaviors later in the list overriding behaviors earlier in the list): off-task, yell/whine, property destruction and physical aggression toward others. Operational definitions of child behaviors are shown in Table 6:

Table 6

*Operational Definitions of Child Behaviors*

<table>
<thead>
<tr>
<th>Child Behaviors</th>
<th>Operational Definitions</th>
<th>Example</th>
<th>Non-example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent compliance with directives</td>
<td>An attempt to follow a parent directive within five seconds without verbal, gestural or physical prompts</td>
<td>Child is told to clean up toys and within 5 seconds attempts to pick up a toy, but has physical difficulty doing so</td>
<td>Child is told to clean up toys and 7 seconds later, begins picking up toys</td>
</tr>
<tr>
<td>Prompted compliance</td>
<td>An attempt to follow a parent directive within five seconds with verbal, gestural or physical prompts</td>
<td>Child is told to put toys on the shelf and within 5 seconds, the parent points and then the child complies</td>
<td>Child is told to put toys on the shelf and 30 seconds later, the parent helps the child with the task</td>
</tr>
<tr>
<td>Noncompliance</td>
<td>No response within 5 seconds of the adult directive</td>
<td>Child is told to clean up toys and instead leaves the room</td>
<td>Child is told to put away toys and yells while complying within 5 seconds</td>
</tr>
<tr>
<td>Appropriate behavior/ on task</td>
<td>Instances when property destruction, physical aggression toward others or physical aggression toward self are not occurring AND the child is engaging in the behavior indicated by the previous parent command</td>
<td>Child is engaged is putting away toys without complaining or displaying aggression</td>
<td>Child is crawling under the table for more than 3 seconds after being told to sit in chair</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Off task</td>
<td>Not engaged in the activity for more than 3 seconds OR inappropriate behavior that is not yell/whine, property destruction, physical aggression toward others or physical aggression toward self</td>
<td>Child is crawling under the table for more than 3 seconds after being told to sit in chair, but is not displaying aggression</td>
<td>Child is told to put away toys, then pushes car for 2 seconds before putting the car away</td>
</tr>
<tr>
<td>Yell/Whine</td>
<td>High pitched or loud utterances</td>
<td>Child screams when told to put away toys</td>
<td>Child is talking to self or repeating what others are saying</td>
</tr>
<tr>
<td>Property destruction</td>
<td>Destroying or attempting to destroy property including throwing, punching, hitting, kicking or breaking objects</td>
<td>Throwing a toy at the wall</td>
<td>Playing with a toy in a way it was not intended, such as spinning the wheels on a car</td>
</tr>
<tr>
<td>Physical aggression toward others</td>
<td>Physical actions against another person, such as hitting, kicking, biting or grabbing from another person</td>
<td>Slapping parent</td>
<td>Throwing a toy on the floor and it bounces up and hits parent</td>
</tr>
</tbody>
</table>

**Design and Phases**

A multiple-baseline across parent-child dyads was used. Parents identified the period of the day when their child’s behavior was most problematic. This part of the day was targeted for all behavior observations. Parents and children were observed completing a task that is typically problematic. Three of the four families were also
observed during 5 minutes of play. One family requested not to do a play session because completing the task was so stressful for them that they did not want to also add completing a play task. Table 7 depicts the type of tasks that were observed for each dyad.

Table 7

*Child Tasks*

<table>
<thead>
<tr>
<th>Child</th>
<th>Tasks</th>
<th>Parent Created Goal</th>
</tr>
</thead>
</table>
| Ashton | Clean bedroom  
- put toys in bedroom closet | Ashton will clean his room with increased independence and without tantruming. |
| Benjamin | Get ready for school  
- get dressed, pack backpack, eat breakfast and get out front door | Benjamin will get ready for school with increased independence and without tantruming. |
| Caden | Complete household chores  
- cleaning different areas of the house  
Complete homework  
- complete homework task | Caden will complete assigned chores without displaying aggressive behaviors.  
Caden will complete a homework task without tantruming. |
| Devon | Complete homework  
- complete homework task | Devon will complete a homework task without tantruming. |

**Baseline (A)**

During baseline, dyads were observed once to twice per week for 10 minute sessions. During the observations, children completed a task as directed by their parent for five minutes and participated in a play session with their parent for five minutes (except for one family, as noted above). Observations were videotaped and later coded by a coder who was blind to which phase families were in. Behavior-specific praise was
the phase change variable because it is a skill taught early in the parent training program, and it is considered a foundational skill upon which the other skills are built. Baseline continued until a dyad had displayed a stable trend in the rate of parents’ behavior specific praise data and at least three sessions had lapsed since the last dyad began the parent training phase. At that point, the dyad began the parent training phase.

**Parent Training (B)**

During the parent training phase, parents participated in 30 minute parent training sessions. Immediately following the parent training, behavior observations were conducted in the same way as they were during baseline. (Benjamin’s observation was conducted the following morning. His family’s goal involved the morning routine, which was a time of day that was too early and hence stressful for the family to also participate in parent training. Instead, for him, parent training occurred on the previous afternoon. Parent training lasted for six sessions.

**Feedback (C)**

The third phase was the feedback. During this phase, parents received a one page feedback sheet with two graphs: one depicting parent use of clear commands and child independent compliance and the other depicting parent use of behavior-specific praise on all previous observation sessions. Parents also received a brief explanation of what the graphs were depicting. Immediately following receipt of the feedback sheet, observations were conducted in the same way as they were during the baseline and training phases. Dyads remained in this phase until their behavior specific praise data were stable.
Data Collection Procedures

The primary investigator videotaped all behavior observations. Videotapes were coded by trained coders who were blind to which phase the families were in. One coder was the main coder for all videos, while a second coder served as an independent reliability check. Coders attended a two hour training prior to the start of the study. During the study, two more booster training sessions were held. In addition, coders practiced coding 15 hours of videos.

Interobserver Agreement

The coders practiced coding observational data until they reached 80% inter-rater reliability. For at least 33% of the behavior observation session, both coders collected behavioral data to determine interobserver agreement. Interobserver agreement was calculated by dividing the number of observational agreements by the number of agreements plus number of disagreements (A/[A+D]).

Social Validity

Social validity data were collected in order to assess how meaningful parents found the training (see Appendix G). The social validity measure was adapted from Wheeler, Carter, Mayton and Thomas (2002). At the last home visit, parents were given the questionnaire to fill out.

Data Analysis

Observable Behavior

Data were collected on observed parent and child behavior. Frequency data were collected for the following parent behaviors: clear commands, unclear commands, behavior-specific praise, non-specific praise and descriptive play statements. Frequency
data were collected for the following child behaviors: independent compliance, prompted compliance and non-compliance. Duration data were collected for the following child behaviors: appropriate/on-task behavior, off-task behavior, yell/whine, property destruction and aggression toward others. Each variable was analyzed separately. In addition, composite positive parenting practices was calculated by combining parent use of clear commands during tasks, praise during tasks, descriptive play statements during play and praise during play. Data were analyzed by calculating changes in means and percent of non-overlapping data points (PND). PND was calculated by counting the number of data points in a phase that were higher than the highest data point in the previous phase, dividing by the total number of data points in the later phase and multiplying by 100 (Kazdin, 1982; Scruggs & Mastropieri). Data were interpreted as they are collected in order to make decisions about the appropriateness of planned phase changes. In addition, part of the feedback phase for parents involved immediate analysis of their data in order to provide feedback during that session.

**Parent Report**

The ECBI was administered pre and post intervention. A paired samples t-test was used to determine if changes in scores were statistically significant.

**Social Validity**

The social validity measure was scored by assigning numbers (one for strongly disagree and five for strongly agree) to each response. The mean for each parent was calculated. For the open-ended items, all responses are shared in the results section.
CHAPTER III

RESULTS

Overview

The results of this study are reported below. First, inter-observer agreement data are reported. Next, results are reported for relevant variables for each of the following research questions: 1) Does training in the core content of IY increase the use of positive parenting practices for parents of children with autism? 2) Does VPF after training in IY increase the use of positive parenting practices for parents of children with autism? 3) Does parent training in the core content of IY decrease externalizing behavior in children with autism? 4) Does providing parents with VPF after receiving training in the core content of IY decrease externalizing behavior in children with autism? 5) Is the core content of IY with VPF socially valid for parents of children with autism? For each research question, the data are reported on means and ranges, PND and data are graphically depicted.

Interobserver Agreement

Inter-rater reliability data were collected for 33% of sessions in each phase for each dyad. Frequency data were considered reliable if the mean percent of agreement for each dyad remained at or above 80% (Kazdin, 1982). The mean percents of agreement for Devon was 84% (range 77-94), Ashton was 85% (range 78-93), Benjamin was 97% (range 83-100) and Caden was 83% (range 74-89). This information is displayed in Table 8.
Table 8

Means and Ranges of Interobserver Agreement for Each Dyad across Phases

<table>
<thead>
<tr>
<th>Dyad</th>
<th>Phase A</th>
<th>Phase B</th>
<th>Phase C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>87% (80-94)</td>
<td>83% (79-85)</td>
<td>82% (77-86)</td>
</tr>
<tr>
<td>Ashton</td>
<td>84% (78-89)</td>
<td>86% (80-93)</td>
<td>87% (84-89)</td>
</tr>
<tr>
<td>Benjamin</td>
<td>100% (100-100)</td>
<td>92% (83-100)</td>
<td>100% (NA)</td>
</tr>
<tr>
<td>Caden</td>
<td>82% (74-87)</td>
<td>83% (77-88)</td>
<td>86% (83-89)</td>
</tr>
</tbody>
</table>

Research Questions


To answer these questions, parents were observed interacting with their children during a five minute task and five minutes of play. Results for each dependent variable for each condition are reported below. In addition, the following variables were combined to create the variable of “composite positive parenting practices”: parent praise during tasks, parent use of clear commands during tasks, parent use of praise during play and parent use of descriptive play statements during play.

During the task condition, the following dependent variables for parent behaviors were coded: clear commands, unclear commands, behavior specific praise and non-specific praise. Frequencies for each behavior were recorded. To analyze changes in use of clear commands, frequencies of clear commands were divided by total commands.
(clear plus unclear commands) and were converted to percent of commands that were clear. For analysis, behavior specific praise and non-specific praise were combined and converted to a rate per minute. During the play condition, frequencies of the following dependent variables for parent behaviors were coded: clear commands, unclear commands, behavior specific praise, non-specific praise and descriptive play statements. To analyze changes in use of descriptive play statements, the total number of descriptive play statements was divided by the total clear commands, unclear commands and descriptive play statements to determine the percent of play statements made during the play sessions. For analysis behavior specific praise and non-specific praise were combined in order to capture parents’ positive interactions with their children and then were converted to a rate per minute. For each condition and variable, means and ranges, PND and graphical depictions of changes are discussed to answer the questions. PND was used as a measure of the meaningfulness of change. Interventions are considered highly effective if PND is 90% or higher; moderately effective between 70% and 90%; mildly effective between 50% and 70%; and ineffective if below 50% (Scruggs & Mastropieri, 1994).

Parents’ Use of Clear Commands during Tasks

Table 9 displays the means and ranges of parents’ observed used of clear commands during tasks for each phase. The table reports the mean percent followed by the percent range in parentheses and the mean rate per minute in italics. Devon, Ashton and Benjamin’s parents showed overall decreases in the percent of clear commands they gave during tasks. For Devon’s parent, the mean percent of clear commands decreased from phase A (48%) to phase B (43%) and phase B to phase C (34%), with an overall
decrease from phase A to phase C. Ashton’s parent showed a slight increase in the mean percent of clear commands used from phase A (38%) to phase B (42%), but her mean dropped from phase B to phase C (25%), with an overall decrease from phase A to phase C. Benjamin’s parent showed decreases in her mean percent of clear commands from phase A (20%) to phase B (14%) and from phase B to phase C (0%), with an overall decrease from phase A to phase C. Caden’s parent, however, showed an overall increase in her mean use of clear commands. From phase A (16%) to phase B (5%), her mean percent of clear commands decreased, but from phase B to phase C (33%), her mean percent of clear commands increased to a level higher than phase A.

Table 9

Means and Ranges of Parents’ Percent of Clear Command Use and Rate per Minute of Clear Commands During Tasks

<table>
<thead>
<tr>
<th>Parent</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>48% (37-62)</td>
<td>43% (33-60)</td>
<td>34% (26-46)</td>
</tr>
<tr>
<td></td>
<td>3.1</td>
<td>3.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Ashton</td>
<td>38% (0-64)</td>
<td>42% (32-71)</td>
<td>25% (18-29)</td>
</tr>
<tr>
<td></td>
<td>1.0</td>
<td>1.8</td>
<td>1.5</td>
</tr>
<tr>
<td>Benjamin</td>
<td>20% (0-44)</td>
<td>14% (0-45)</td>
<td>0% (0-0)</td>
</tr>
<tr>
<td></td>
<td>0.4</td>
<td>0.4</td>
<td>0.0</td>
</tr>
<tr>
<td>Caden</td>
<td>16% (0-39)</td>
<td>5% (0-20)</td>
<td>33% (17-44)</td>
</tr>
<tr>
<td></td>
<td>0.5</td>
<td>0.1</td>
<td>1.1</td>
</tr>
</tbody>
</table>

PND was calculated for each parent in each phase to determine how meaningful changes were. This information is displayed in Table 10 below. The parents of Devon, Benjamin and Caden showed decreases in their use of clear commands from phase A to
B. Ashton’s parent was the only parent to show increased use of clear commands from phase A to phase B. The PND for Ashton was 17%, which is not considered a meaningful change due to parent training (Scruggs & Mastropieri, 1994). The parents of Devon, Ashton and Benjamin showed decreases in their use of clear commands from phase B to C. Caden’s parent showed an increase in use of clear commands from phase B to phase C. The PND for Caden’s parent was a 66% indicating that feedback was mildly effective in improving her use of clear commands (Scruggs & Mastropieri).

Table 10

Percent of Non-Overlapping Data Points for Parents’ Use of Clear Commands during Tasks

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Ashton</td>
<td>17%</td>
<td>NA</td>
</tr>
<tr>
<td>Benjamin</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Caden</td>
<td>NA</td>
<td>66%</td>
</tr>
</tbody>
</table>

Data are graphically displayed in Figure 1. The session in which clear commands was introduced is noted in the graph. Visual inspection of the graph reveals variability in the data and overall downward trends and/or decreases in level for most parents in the training and feedback phases.
Figure 1. Parents’ percent of clear commands used during tasks.
Parents’ Use of Praise during Tasks

Table 11 displays the means and ranges of parents’ rates of praise for each phase. The table reports the mean rates followed by the ranges in parentheses. Overall, parents increased their rates of praise from phase A to phase C. Devon’s parent increased her mean rate per minute of praise from phase A (1.6) to phase B (2.1) and from phase B to phase C (2.4), for an overall increase from phase A to phase C. Mean rate of praise for Ashton’s parent stayed the same from phase A (0.4) to phase B (0.4), but increased from phase B to phase C (0.7), for an overall increase from phase A to phase C. Benjamin’s parent increased her mean rate of praise from phase A (0.1) to phase B (0.3), but her rate from phase B to phase C (0.2) decreased. However, her mean rate in phase C remained slightly higher than her rate in phase A. Caden’s parent increased her rate of praise from phase A (0.3) to phase B (0.5) and from phase B to phase C (0.7), for an overall increase from phase A to phase C.

Table 11

Means and Ranges of Parents’ Rate of Praise per Minute during Tasks

<table>
<thead>
<tr>
<th>Parent</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>1.6 (1.4-1.8)</td>
<td>2.1 (1.2-3.2)</td>
<td>2.4 (1.7-2.8)</td>
</tr>
<tr>
<td>Ashton</td>
<td>0.4 (0.0-0.6)</td>
<td>0.4 (0.0-0.9)</td>
<td>0.7 (0.2-1.2)</td>
</tr>
<tr>
<td>Benjamin</td>
<td>0.1 (0.0-0.4)</td>
<td>0.3 (0.0-1.6)</td>
<td>0.2 (0.0-0.4)</td>
</tr>
<tr>
<td>Caden</td>
<td>0.3 (0.0-1.3)</td>
<td>0.5 (0.2-0.8)</td>
<td>0.7 (0.2-1.0)</td>
</tr>
</tbody>
</table>

PND was calculated for each parent in each phase to determine how meaningful changes were. This information is displayed in Table 12 below. The PNDs for the
parents of Ashton, Benjamin and Caden from phase A to phase B were 33%, 17% and 0% respectively, indicating that the parent training was not effective (Scruggs & Mastropieri, 1994). The PND for Devon’s parent from phase A to phase B was 67%, indicating that the parent training was mildly effective in increasing use of praise (Scruggs & Mastropieri). From phase B to C, Benjamin’s parent did not increase her use of praise. For the other parents, the PNDs were as follows: Devon 0%, Ashton 33% and Caden 33% indicating that the feedback was not effective in changing rates of praise (Scruggs & Mastropieri).

Table 12

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>67%</td>
<td>0%</td>
</tr>
<tr>
<td>Ashton</td>
<td>33%</td>
<td>33%</td>
</tr>
<tr>
<td>Benjamin</td>
<td>17%</td>
<td>NA</td>
</tr>
<tr>
<td>Caden</td>
<td>0%</td>
<td>33%</td>
</tr>
</tbody>
</table>

Figure 2 below graphically depicts the data. The session in which praise was introduced is noted in the graph. Visual inspection reveals an increasing trend and level increases in the training and feedback phases for Devon’s parent. Though there were slight level increases for Benjamin’s and Caden’s parents from phase A to phase B and for Ashton’s and Caden’s parents from phase B to phase C, there were no overall trend changes.
Figure 2. Parents’ rate per minute of praise during tasks.
Parents’ Use of Descriptive Play Statements during Play

Table 13 displays the means and ranges of parents’ use of descriptive play statements during play. The table reports mean percent followed by percent range in parentheses and mean rate per minute in italics. Overall, Devon and Caden’s parents showed an increase in their mean use of descriptive play statements during play.

Devon’s parent increased her mean percent of descriptive play statements from phase A (7%) to phase B (15%) and from phase B to phase C (22%), with an overall increase from phase A to phase C. Caden’s parent also increased her mean use of descriptive play statements from phase A (2%) to phase B (7%) and phase B to phase C (16%), with an overall increase from phase A to phase C. Ashton’s parent showed a slight increase of descriptive play statements from phase A (5%) to phase B (6%), but the mean for phase C (4%) was lower than either previous phase.

Table 13

Means and Ranges of Parents’ Percent of Descriptive Play Statements and Mean Rate per Minute of Descriptive Play Statements during Play

<table>
<thead>
<tr>
<th>Parent</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>7% (0-15) 0.4</td>
<td>15% (0-52) 1.2</td>
<td>22% (12-38) 1.3</td>
</tr>
<tr>
<td>Ashton</td>
<td>5% (0-23) 0.2</td>
<td>6% (0-24) 0.4</td>
<td>4% (0-8) 0.2</td>
</tr>
<tr>
<td>Caden</td>
<td>2% (0-13) 0.1</td>
<td>7% (0-30) 0.3</td>
<td>16% (8-27) 0.4</td>
</tr>
</tbody>
</table>
PND was calculated for each parent in each phase to determine how meaningful changes were. This information is displayed in Table 14 below. For the parents of Devon, Ashton and Caden, the PND from phase A to B were as follows: Devon 33%, Ashton 17% and Caden 17%, indicating that the parent training was not considered effective for changing descriptive play statements (Scruggs & Mastropieri, 1994). From phase B to C, Ashton’s parent decreased her use of descriptive play statements. For the parents of Devon and Caden, PNDs were 0%, indicating the feedback was not effective in changing descriptive play statements (Scruggs & Mastropieri).

Table 14

Percent of Non-Overlapping Data Points for Parents’ Use of Descriptive Play Statements during Play

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>33%</td>
<td>0%</td>
</tr>
<tr>
<td>Ashton</td>
<td>17%</td>
<td>NA</td>
</tr>
<tr>
<td>Caden</td>
<td>17%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Figure 3 below graphically displays the data. The session in which descriptive play statements were introduced is noted in the graph. Visual inspection reveals variability in Ashton’s and Caden’s parent data. Though the level increases in the training and feedback phases for Devon’s parent were slight, there were increases in trend.
Figure 3. Percent of descriptive play statements used by parents during play.
Parents’ Use of Praise during Play

Table 15 displays parents’ rate per minute of praise during play sessions. The table reports the means followed by the ranges in parentheses. Devon’s parent increased her rate of praise slightly from phase A (0.6) to phase B (0.7) and also showed an increase from phase B to phase C (1.0) with an overall increase from phase A to phase C. Ashton’s parent decreased her mean rate of praise from phase A (0.5) to phase B (0.3), but increased her rate of praise from phase B to phase C (0.8), for an overall increase from phase A to phase C. Caden’s parent increased her rate of praise from phase A (0.2) to phase B (0.6), but decreased her mean rate of praise from phase B to phase C (0.3). However, phase C was higher than phase A.

Table 15

Means and Ranges of Parents’ Rates of Praise during Play

<table>
<thead>
<tr>
<th>Parent</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>0.6 (0.2-1.4)</td>
<td>0.7 (0.2-1.7)</td>
<td>1.0 (0.6-1.8)</td>
</tr>
<tr>
<td>Ashton</td>
<td>0.5 (0.0-1.8)</td>
<td>0.3 (0.0-1.0)</td>
<td>0.8 (0.0-1.4)</td>
</tr>
<tr>
<td>Caden</td>
<td>0.2 (0.0-1.0)</td>
<td>0.6 (0.0-2.8)</td>
<td>0.3 (0.0-1.0)</td>
</tr>
</tbody>
</table>

PND was calculated for each parent in each phase to determine how meaningful changes were. This information is displayed in Table 16 below. From phase A to B, Ashton’s parent decreased her use of praise during play. For the parents of Devon and Caden, PND was 17%, indicating that the parent training was not effective for changing rates of praise during play (Scruggs & Mastropieri, 1994). From phase B to C, Caden’s parent decreased her rate of praise. For the parents of Devon and Ashton, PNDs were
33%, indicating that the feedback was not considered effective for changing rates of praise during play (Scruggs & Mastropieri).

Table 16

Percent of Non-Overlapping Data Points for Parents’ Use of Praise during Play

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>17%</td>
<td>33%</td>
</tr>
<tr>
<td>Ashton</td>
<td>NA</td>
<td>33%</td>
</tr>
<tr>
<td>Caden</td>
<td>17%</td>
<td>NA</td>
</tr>
</tbody>
</table>

Figure 4 below graphically displays the data. The session in which praise was introduced is noted in the graph. Visual inspection reveals that Devon’s parent showed an increase in trend during the training phase, while the other two parents did not. During the feedback phase, Ashton’s parent showed an increase in trend, while the other parents showed decreases in trend.
Figure 4. Parents’ rate per minute of praise during play sessions.
Composite Positive Parenting Practices

Composite positive parenting practices was calculated by combining rates of clear commands during tasks, rates of total praise during tasks, rates of total praise during play and rates of descriptive play statements during play for each parent. Table 17 displays the means and ranges (in parentheses) of parents’ composite positive parenting practices for each phase. Benjamin’s parent did not participate in the play condition, therefore composite positive parenting practices was not calculated for this dyad. For all three dyads, mean rates of composite positive parenting practices increased in each phase and consequently from phase A to phase C. Devon’s parent showed an increase in mean rate from phase A (5.8) phase B (7.1) and phase B to phase C (7.4). Ashton’s parent showed an increase in mean rate from phase A (2.1) to phase B (2.9) and phase B to phase C (3.1). Caden’s parent showed an increase in mean from phase A (1.1) to phase B (1.4) and phase B to phase C (2.4).

Table 17

Means and Ranges of Composite Positive Parenting Practices

<table>
<thead>
<tr>
<th>Parent</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>5.8 (5.2-6.7)</td>
<td>7.1 (4.0-10.7)</td>
<td>7.4 (6.7-7.8)</td>
</tr>
<tr>
<td>Ashton</td>
<td>2.1 (1.4-3.3)</td>
<td>2.9 (2.0-5.9)</td>
<td>3.1 (3.0-3.3)</td>
</tr>
<tr>
<td>Caden</td>
<td>1.1 (0.0-2.6)</td>
<td>1.4 (0.6-4.3)</td>
<td>2.4 (2.0-2.9)</td>
</tr>
</tbody>
</table>

PND was calculated for each parent in each phase to determine how meaningful the changes were. These numbers are presented in table 18 below. For Devon’s parent, PND was 67% from phase A to phase B, indicating that the training was mildly effective.
For the other two parents, PND from phase A to phase B was 17%, indicating that the parent training was not effective for changing composite positive parenting practices (Scruggs & Mastropieri). PND from phase B to phase C was 0% for all three parents, indicating that feedback was not effective in changing composite positive parenting practices (Scruggs & Mastropieri).

Table 18

Percent of Non-Overlapping Data Points for Composite Positive Parenting Practices

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>67%</td>
<td>0%</td>
</tr>
<tr>
<td>Ashton</td>
<td>17%</td>
<td>0%</td>
</tr>
<tr>
<td>Caden</td>
<td>17%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Data are graphically displayed in Figure 5. Visual inspection reveals that Devon’s parent was the only one to show an increase in trend during the training phase. During the feedback phase, all parents showed increases in level, only Ashton’s parent showed a slight increase in trend.
Figure 5. Parents’ rates of composite positive parenting practices.
Does Parent Training in the Core Content of IY Decrease Externalizing Behavior in Children with Autism? Does Providing Parents with VPF after Receiving Training in the Core Content of IY Decrease Externalizing Behavior in Children with Autism?

To answer these questions, children were observed completing a five minute task and during five minutes of play. Results for each dependent variable for each condition are reported below. In addition, in order to determine parents’ perceptions of overall decreases in child externalizing behavior, parents were administered the ECBI (Sutter & Pincus, 1999) before beginning the program (two weeks prior to the start of baseline observations) and upon completion of the feedback phase of intervention. Paired samples t-tests were used to determine the significance of changes from pre to post intervention.

During the both the task condition and the play condition, frequencies of the following dependent variables for children were coded: independent compliance and prompted compliance. To analyze changes in compliance, frequencies of independent compliance and prompted compliance were combined and divided by the combined frequencies of independent compliance, prompted compliance and non-compliance to yield a percent of compliant responses. Durations of the following dependent variables were coded: on-task/appropriate behavior, off-task behavior, yell/whine, property destruction and physical aggression toward others. For each condition and variable, means and ranges, PND and graphical depictions of changes are discussed to answer the questions.
Child Externalizing Behavior during Tasks.

Although parents reported high levels of externalizing behavior during the screening phase of this study and continued to report elevated levels of externalizing behavior during baseline, actual observations yielded low levels of externalizing behavior. Table 19 displays the mean percentages of observed externalizing behavior for each child across phases. For most of the behaviors and phases, percentages ranged from 0%-2%. Exceptions included 9% yell/whine for Devon in baseline and 6%, 8% and 16% yell/whine for Ashton in baseline, training and feedback respectively.

Table 19.

*Phase Mean Percentages of Child Externalizing Behaviors*

<table>
<thead>
<tr>
<th>Child</th>
<th>Yell/whine</th>
<th>Property Destruction</th>
<th>Aggression Others</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td>C</td>
</tr>
<tr>
<td>Devon</td>
<td>9%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Ashton</td>
<td>6%</td>
<td>8%</td>
<td>16%</td>
</tr>
<tr>
<td>Benjamin</td>
<td>2%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Caden</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Child Total Compliance during Tasks

Child independent compliant responses and prompted compliant responses were combined and divided by the total responses in order to establish the percent of responses that were compliant. Table 20 displays the means and ranges (in parentheses) of percent of total compliant responses for each child in each phase. Overall, three children increased their total percent of compliance. However, all children decreased their total
percent of compliance from phase A to phase B. Devon decreased his total compliance from phase A (84%) to phase B (64%) and increased his total compliance from phase B to phase C (94%), which was also higher than his baseline total compliance. Benjamin decreased his total compliance from phase A (74%) to phase B (47%), but increased his total compliance from phase B to phase C (100%), which was also higher than baseline total compliance. Following the same pattern, Caden decreased his percent of total compliance from phase A (89%) to phase B (81%) and increased from phase B to phase C (93%), for an overall increase from phase A to phase C. Ashton, however, decreased his total compliance from phase A (91%) to phase B (77%) and from phase B to phase C (71%).

Table 20

Means and Ranges of Child’s Percent of Total Compliant Responses during Tasks

<table>
<thead>
<tr>
<th>Child</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>84% (65-100)</td>
<td>64% (26-89)</td>
<td>94% (87-100)</td>
</tr>
<tr>
<td>Ashton</td>
<td>91% (83-100)</td>
<td>77% (63-100)</td>
<td>71% (70-72)</td>
</tr>
<tr>
<td>Benjamin</td>
<td>74% (43-100)</td>
<td>47% (0-100)</td>
<td>100% (100-100)</td>
</tr>
<tr>
<td>Caden</td>
<td>89% (73-100)</td>
<td>81% (57-100)</td>
<td>93% (80-100)</td>
</tr>
</tbody>
</table>

PND was calculated for each child in each phase to determine how meaningful changes were. This information is displayed in Table 21 below. From phase A to phase B, all children decreased their independent compliance. From phase B to phase C, Ashton decreased his compliance. PNDs for phase B to C for Benjamin and Caden were 0%, indicating the feedback was not effective for changing total compliance (Scruggs &
Mastropieri, 1994). For Devon from phase B to phase C, PND was 66% indicating that feedback was mildly effective (Scruggs & Mastropieri).

Table 21

Percent of Non-Overlapping Data Point for Total Compliant Responses during Tasks

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>NA</td>
<td>66%</td>
</tr>
<tr>
<td>Ashton</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Benjamin</td>
<td>NA</td>
<td>0%</td>
</tr>
<tr>
<td>Caden</td>
<td>NA</td>
<td>0%</td>
</tr>
</tbody>
</table>

Figure 6 below graphically displays the data. The sessions in which each parent training topic was introduced to parents is noted in the graph. Visual inspection reveals that in addition to all children showing decreases in level from baseline to training phases, Benjamin showed a distinct decreasing trend in the training phase. During the feedback phase, Devon, Benjamin and Caden showed level increases, but Devon was the only one to show an increasing trend.
Figure 6. Child percent of total compliant responses during tasks.
**Child Independent Compliance during Tasks**

Table 22 displays the means and ranges (in parentheses) for the percent of independent compliant responses. Devon decreased his independent compliance from phase A (25%) to phase B (17%) and decreased from phase B to phase C (15%) for an overall decrease from phase A to phase C. Ashton decreased his independent compliance from phase A (37%) to phase B (26%) and also decreased from phase B to phase C (17%), for an overall decrease from phase A to phase C. Benjamin decreased his independent compliance from phase A (68%) to phase B (47%), as well as from phase B to phase C (33%), for an overall decrease from phase A to phase C. However, Caden displayed an increase in his mean percent of independent compliant responses from phase A (56%) to phase B (62%) and phase B to phase C (63%), for an overall increase from phase A to phase C.

Table 22

*Means and Ranges of Child’s Percent of Independent Compliant Responses during Tasks*

<table>
<thead>
<tr>
<th>Child</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>25% (10-40)</td>
<td>17% (7-36)</td>
<td>15% (9-19)</td>
</tr>
<tr>
<td>Ashton</td>
<td>37% (4-69)</td>
<td>26% (6-53)</td>
<td>17% (11-25)</td>
</tr>
<tr>
<td>Benjamin</td>
<td>68% (29-100)</td>
<td>47% (0-88)</td>
<td>33% (0-100)</td>
</tr>
<tr>
<td>Caden</td>
<td>56% (30-100)</td>
<td>62% (29-100)</td>
<td>63% (39-83)</td>
</tr>
</tbody>
</table>

PND was calculated for each child in each phase to determine how meaningful changes were. This information is displayed in Table 23 below. From phase A to B, Devon, Ashton and Benjamin decreased their independent compliance. Caden’s PND
from phase A to B was 17%, indicating the parent training was not effective for changing his percent of independent compliance during tasks (Scruggs & Mastropieri, 1994).

From phase B to C, Caden, Ashton and Benjamin decreased their independent compliance. Caden’s PND from phase B to C was 0%, indicating feedback was not effective for changing his percent of independent compliance during tasks (Scruggs & Mastropieri).

Table 23

Percent of Non-Overlapping Data Point for Child’s Percent of Independent Compliance

<table>
<thead>
<tr>
<th>Parent</th>
<th>Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Ashton</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Benjamin</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Caden</td>
<td>17%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Figure 7 below displays the data graphically. The sessions in which each parent training topic was introduced to parents is noted in the graph. Visual inspection reveals that even though Caden showed an increase in level from baseline to training phase, he only had an increase in trend in the feedback phase.
Figure 7. Percent of independent compliant responses.
Child On-Task/Appropriate Behavior during Tasks

Table 24 displays the means and ranges (in parentheses) for percent of child on-task/appropriate behavior. Three of the four children exhibited increases in mean percent of time spent in on-task/appropriate behavior from baseline to the feedback phase. Devon increased the percent of time he spent on-task from phase A (77%) to phase B (85%) and from phase B to phase C (96%), for an overall increase from phase A to phase C. Caden increased his on-task time from phase A (85%) to phase B (96%) and then it remained the same from phase B to phase C (96%), for an overall increase from phase A to phase C. Benjamin displayed a decrease in on-task behavior from phase A (70%) to phase B (62%), but an increase from phase B to phase C (100%), which was also higher than phase A. However, Ashton experienced a steady decrease in on-task behavior. In phase A he was on-task an average of 84% of the time, dropped to 79% for phase B and dropped further to 58% for phase C.

Table 24

Means and Ranges of Child Percent of On-task/Appropriate Behavior during Tasks

<table>
<thead>
<tr>
<th>Child</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>77% (56-100)</td>
<td>85% (60-100)</td>
<td>96% (89-100)</td>
</tr>
<tr>
<td>Ashton</td>
<td>84% (42-99)</td>
<td>79% (66-100)</td>
<td>58% (57-58)</td>
</tr>
<tr>
<td>Benjamin</td>
<td>70% (31-93)</td>
<td>62% (50-97)</td>
<td>100% (100-100)</td>
</tr>
<tr>
<td>Caden</td>
<td>85% (60-100)</td>
<td>96% (92-100)</td>
<td>96% (89-100)</td>
</tr>
</tbody>
</table>

PND was calculated for each child in each phase to determine how meaningful changes were. This information is displayed in Table 25 below. From phase A to B,
Ashton and Benjamin decreased their percent of appropriate/on-task behavior. PNDs for Devon and Caden were 0%, indicating that the parent training was not effective for changing percent of on-task/appropriate behavior during tasks (Scruggs & Mastropieri, 1994). PND for Devon from phase B to C was 0%, indicating feedback was not effective for changing on-task/appropriate behavior during tasks (Scruggs & Mastropieri). For Benjamin from phase B to phase C, PND was 100% indicating that feedback was a highly effective intervention for changing on-task/appropriate behavior (Scruggs & Mastropieri).

Table 25

*Percent of Non-Overlapping Data Points for Child Percent of Appropriate/On-task Behavior during Tasks*

<table>
<thead>
<tr>
<th>Parent</th>
<th>Parent Training (Phase A to Phase B)</th>
<th>Feedback (Phase B to Phase C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Ashton</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Benjamin</td>
<td>NA</td>
<td>100%</td>
</tr>
<tr>
<td>Caden</td>
<td>0%</td>
<td>NA</td>
</tr>
</tbody>
</table>

Figure 8 below displays the data graphically. The sessions in which each parent training topic was introduced to parents is noted in the graph. Visual inspection reveals that even though Devon and Caden both showed level changes from baseline to training phases, Devon showed a decrease in trend and Caden only showed a slight increase in trend. During the feedback phase, Devon, Benjamin and Caden showed level changes
from training to feedback phases, but only Devon showed an increase in trend. Benjamin was at 100%, so could not show an increase and Caden showed a decrease in trend.
Figure 8. Child on-task/appropriate behavior during tasks.
Child On-Task/Appropriate Behavior during Play

Overall, children had and maintained high levels of on-task behavior during play. Table 26 displays means and ranges (in parentheses) of percent of on-task behavior during play. Devon was 100% on-task for all play sessions in all phases. Ashton displayed on-task behavior a mean of 83% for phase A, 90% for phase B and 91% for phase C. Caden displayed on-task behavior a mean of 95% of the time for phase A and 100% for all of phases B and C. Because all children displayed high levels of on-task behavior during play, data are not graphed and PNDs were not calculated.

Table 26

Means and Ranges of Child Appropriate/On-task Behavior during Play

<table>
<thead>
<tr>
<th>Child</th>
<th>Phase A (Baseline)</th>
<th>Phase B (Training)</th>
<th>Phase C (Feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devon</td>
<td>100% (100-100)</td>
<td>100% (100-100)</td>
<td>100% (100-100)</td>
</tr>
<tr>
<td>Ashton</td>
<td>83% (30-100)</td>
<td>90% (70-100)</td>
<td>91% (74-100)</td>
</tr>
<tr>
<td>Caden</td>
<td>95% (82-100)</td>
<td>100% (100-100)</td>
<td>100% (100-100)</td>
</tr>
</tbody>
</table>

Overall Decreases in Child Externalizing Behavior

Table 27 displays scores on the ECBI for each child pre and post intervention. The results of the paired sample t-test are displayed in table 28. All parents reported perceived decreases in the intensity of their child’s behavior. A paired samples t-test revealed that the change in intensity scores from pre to post intervention was statistically significant ($p < .05$). On the problem subscale, three parents reported perceived decreases in how problematic they felt their child’s behavior was, while one parent reported an increase in her perceptions of how problematic her child’s behavior was. A paired
samples t-test revealed that the changes from pre to post intervention were not statistically significant on the problem subscale.

Table 27

*Child ECBI Scores Pre and Post Intervention*

<table>
<thead>
<tr>
<th>Child</th>
<th>Intensity</th>
<th>Δ</th>
<th>Problem</th>
<th>Δ</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>Devon</td>
<td>57</td>
<td>54</td>
<td>-3</td>
<td>56</td>
</tr>
<tr>
<td>Ashton</td>
<td>54</td>
<td>49</td>
<td>-5</td>
<td>50</td>
</tr>
<tr>
<td>Benjamin</td>
<td>67</td>
<td>56</td>
<td>-11</td>
<td>60</td>
</tr>
<tr>
<td>Caden</td>
<td>79</td>
<td>65</td>
<td>-14</td>
<td>72</td>
</tr>
</tbody>
</table>

Table 28

*Results of Paired Samples t-test for Child ECBI*

<table>
<thead>
<tr>
<th></th>
<th>Mean Δ</th>
<th>SD</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intensity subscale</td>
<td>-8.3</td>
<td>5.1</td>
<td>3.2*</td>
</tr>
<tr>
<td>Problem subscale</td>
<td>-4.3</td>
<td>9.4</td>
<td>.90</td>
</tr>
</tbody>
</table>

* p<.05

Is the Core Content of IY with VPF Socially Valid for Parents of Children with Autism?

The social validity measure included 12 items. Seven items were statements that allowed parents to rate their degree of agreement. Options ranged from 1 (strongly disagree) to 5 (strongly agree). Five of the items were open-ended statements that allowed parents to share what they liked, disliked and learned from the program.
Table 29 displays the scores each parent reported on the social validity measure. With the exception of one score of 3, all scores were 4 or 5, indicating parents agreed or strongly agreed with the statements below. The mean score for parents ranged from 4.3 to 5.

Table 29

*Social Validity Scores*

<table>
<thead>
<tr>
<th>Question</th>
<th>Devon</th>
<th>Ashton</th>
<th>Benjamin</th>
<th>Caden</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I gained knowledge about dealing with my child’s disruptive behaviors during the course of this parent training program.</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2. I learned a lot about the way I parent during this parent training program.</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>3. I have made changes to the way I interact with my child.</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4. My child has shown a decrease in his/her disruptive behaviors.</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>5. I enjoyed participating in the parent training program.</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>6. Participating in this program was a good use of my time.</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>7. I would recommend this program to other parents.</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Mean Score</td>
<td>4.3</td>
<td>4.6</td>
<td>5</td>
<td>4.4</td>
</tr>
</tbody>
</table>

On the open-ended items parents shared what they liked about the style and content of the program, what they would change about the style or content and the most important thing they learned. In response to the items about what parents liked, parents
responded with the following: handouts, focusing on one unit at a time, the one-on-one training format, the consistent routine each session, reviewing each session, and the play and routine lessons of the program. Two parents also noted that they liked how it was “individualized” for their child, despite the fact that the content remained the same across parents. In response to the items about what parents would change, two parents responded that they would change nothing and one parent responded that she thought it would be helpful if the facilitator modeled concepts with the child. The fourth parent expressed that the videos were not that helpful because the children in them did not have autism and she would have liked to spend more time on the earliest lessons of the training because the later lessons did not apply to her son (timeout is not an appropriate consequence for his escape/avoidant behaviors). Finally, in response to the item allowing parents to share the most important thing they learned, one reported learning how to play with her son and “get him to allow [her] into his world.” The other three parents cited the importance of being specific with their praise and one of these parents also mentioned the importance of being specific with commands.

**Summary**

Overall results indicated that parents increased their use of positive parenting practices. However, most of the gains were minimal and the specific areas of improvement varied across individuals. After receiving the parent training, one parent increased her mean percent of clear commands during tasks, three parents increased their mean rates of praise during tasks, three parents increased their mean percent of descriptive play statements during play and two parents increased their mean rates of praise during play. Mean composite positive parenting practices increased for all three parents whom the score could be calculated. After receiving feedback, one parent
increased her mean percent of clear commands during tasks, three parents increased their mean rates of praise during tasks, one parent increased her mean percent of descriptive play statements during play and two parents increased their mean rates of praise during play. Mean composite positive parenting practices increased for all three parents whom the score could be calculated.

Overall results for children also varied. After their parents received the parent training, none of the children increased their mean percent of total compliance. One child increased his mean percent of independent compliance during tasks. Two children increased their mean percent of on-task/appropriate behavior during tasks. After their parents received feedback, three children increased their mean percent of total compliance during tasks, one increased his mean percent of independent compliance during tasks and two increased their mean percent of on-task/appropriate behavior during tasks.

Parents reported high scores on the social validity measure, indicating that the program was socially valid for their families. Open-ended responses indicated that parent liked the components of the program (such as routine and handouts), and the praise and play content were most helpful. Parents noted that videos with children who had autism and modeling concepts with their child could improve the program.
CHAPTER IV
DISCUSSION

Overview

One of the most challenging areas for parents of young children with autism is externalizing behaviors (Rao & Beidel, 2009). While autism is not caused by parenting behaviors, the same parenting practices that contribute to the development and maintenance of externalizing behavior in other children are relevant for parents of children with autism (Brookman-Frazee, et al., 2006). Parent training has been identified as an effective tool for helping parents gain skills to address these concerns (Brookman-Frazee, et al.). However, most parent trainings for parents of children with autism are highly individualized and conducted in a one-on-one format (Schultz et al., in press) making it difficult for others to replicate or conduct in a group setting. IY (Webster-Stratton, 2008) is a parent training program that has a large research base supporting its effectiveness with families who have children with externalizing behaviors (Gardner, et al., 2006; Taylor, et al., 1998; Webster-Stratton, 1994, 1998; Webster-Stratton & Hammond, 1997; Webster-Stratton, et al., 2004). Further, IY (Webster-Stratton) has many elements consistent with effective parent training program for children with autism (e.g., Moran & Whitman, 1991; Smith & Lerman, 1999). In addition, research has suggested that adding a feedback component to parent training may bolster outcomes for parents and children (Phaneuf & McIntyre, 2007).

The purpose of this study was to evaluate the effectiveness of the core content of the IY (Webster-Stratton, 2008) parent training program for parents of children with autism with and without VPF (Reinke, et al., 2007). However, because this intervention
has not specifically been evaluated for children with autism or their parents, this study aimed to evaluate the effectiveness and social validity of the core content of the program. Therefore, the intervention was delivered in a one on one format and evaluated with a multiple baseline design, as a first step in determining potential effectiveness (Smith, et al., 2007). A VPF phase was added to evaluate whether or not such an intervention could bolster skills gained during intervention.

Using a multiple baseline across participants design, observed changes in use of parenting practices, as well as child externalizing behavior were coded from videotaped observations. Four parent-child dyads participated in a task condition (where the parents instructed their children to complete a task that typically resulted in externalizing behavior on the child’s part) and three of those four dyads participated in a play condition (where the parent and child played together). Each observation was for five minutes of play and five minutes of task completion. Phase A was baseline and only observations were conducted. Phase B was the parent training phase and all families participated in six sessions of training. Phase C was the feedback phase during which all parents received graphical depictions of their behavior from the previous sessions.

Results indicated that overall, parents and children made positive gains. However, most gains were minimal and specific areas of growth varied across dyads. The following discussion addresses the specific outcomes and implications for each research question. In addition, limitations and future directions are discussed.
Research Questions

Does Training in the Core Content of IY Increase the Use of Positive Parenting Practices for Parents of Children with Autism?

The purpose of this research question was to determine if parents would increase their use of positive parenting practices (in this case praise, clear commands and descriptive play statements) due to the training in IY. For all three parents who participated in both play and task observation conditions increases in mean rates of composite positive parenting practices were observed. However, improvements in specific areas of positive parenting varied across parents. All three parents increased their use of these descriptive play statements during play. Three parents increased their use of praise during tasks from baseline to training phases (Devon, Benjamin and Caden). Interestingly, the one parent who did not increase rates of praise during tasks (Ashton) was the only parent to increase her percent of clear commands used during tasks. The same parents who increased their praise during tasks, also increased their praise during play, while the parent who increased her use of clear commands during tasks did not increase her use of praise during play.

When all skills were combined to create the variable composite positive parenting practices, mean increases in rate per minute were found for all three parents who had data available for all variables. Other studies on IY (Webster-Stratton, 2008) have also found increases in positive parent practices for parents participating in the IY (Webster-Stratton) program (e.g., Webster-Stratton, et al., 2001). However, these evaluations of IY have had large sample sizes allowing for comparisons to control groups and statistical analysis for determining significance of outcomes, which the current study was not able to do. One study in particular found that 50% of parents attended less than half the
sessions (about 6) and still benefited from the program (Reid, et al., 2007). Similarly, the current study evaluated a six session version of the IY program. In the current study, although positive outcomes were found for parents, the changes were minimal. The program evaluated by Reid, et al. spread their sessions over two years, which may be a variable important to effective parent training programs. Perhaps only a minimal number of sessions are needed, but spreading them out over time is necessary for enhanced skill development. Additionally, the composite positive parenting practices variable in this study has limitations due to the fact that the variables that were originally analyzed as percentage were converted to rates, so that the variables could be combined. Because the task and play conditions were not standardized across parents, the rates of commands and descriptive play statements could potentially vary due to the activities being completed.

Results in the present study indicated mixed outcomes for parents’ acquisition of the specific target skills. Similarly a study by Lerman, et al. (2000) evaluated a parent training targeting non-compliance and externalizing behavior for children who had developmental disabilities. Though their program was not IY, they targeted similar variables in their parent training. Their results yielded similar findings in that parents only gained some of the target skills after the intervention alone. However, the parents who did respond to the intervention alone did so at markedly higher levels than found in the current study.

The present study also found that all three parents who participated in the play condition increased their use of descriptive play statements. One reason parents may have been successful in increasing their descriptive play statements could be contributed
to the fact that their children were on-task the majority of the time during play tasks. Therefore, parents could concentrate on using their newly learned skill without needing to deal with problem behavior. Other research has also found that parents are successful in learning skills for working with their children who have autism within play settings (Koegel, et al., 1999). In fact, Moran and Whitman (1991) targeted non-compliance by training parents to use appropriate prompts and rewards during play. The researchers used instruction, video modeling and practice to teach the parents. During the training phase, mothers increased their use of appropriate prompts and use of rewards.

Finally, three of four parents increased their rates of praise during tasks and two of three increased their rates of praise during play in the present study. One parent increased her percent of clear commands. Other research on IY (Webster-Stratton, 2008) has combined these variables with others to create composite variables (e.g. Reid, Webster-Stratton & Beauchaine, 2001), likely due to the large number of participants in these studies. Therefore, little is known about parents’ acquisition of these specific variables in isolation. In the present study, improvements in use of praise were more noticeable than improvements in use of clear commands. Part of the reason for this may be that praise was taught earlier in the program, giving parents more time to practice using it. Parent use of praise also appeared to be associated with child on-task behavior (which is discussed in more detail later in the discussion), which may have provided reinforcement for parents. Devon’s parent in particular made the most marked improvements of all the parents. However, she also displayed some use of praise during baseline. Future research should explore the relationship between baseline skill level and skill changes due to intervention. In addition, Devon’s parent was a teacher and had the
highest level of educational attainment of all the parents and had an occupation that likely requires her to participate in some level of ongoing professional development and/or training. Future research should also explore the relationship between parent education level and skill changes due to intervention.

In conclusion, the findings from the present study related to the first research question make an important contribution to the field. Parents of children with autism may improve their positive parenting practices due to participation in IY (Webster-Stratton, 2008) parent training. However, in light of the gains being minimal, the trainings may need to be modified to be extended over time or to focus on foundational skills such as play and praise in order to optimize outcomes for parents. A preliminary step to modifying the IY (Webster-Stratton) program may be to identify specifically which parenting practices are key to target in parent training. While some autism interventions have separately targeted the same skills as IY (Webster-Stratton), research identifying which variables are most salient for parents of children with autism could provide valuable information for the field of parent training. Further, in the absence of identified benchmarks in the literature, it is difficult to know how much change parents need to make in order to impact child behavior. Future research should work toward indentifying clear benchmarks for parenting skills.

**Does VPF after Training in IY Increase the Use of Positive Parenting Practices for Parents of Children with Autism?**

The purpose of this research question was to determine if parents would increase their use of positive parenting practices after receiving VPF (Reinke, et al., 2007). All parents increased their overall use of composite positive parenting practices from training
to feedback phase. However, similarly to the changes from baseline to training, parents varied in their specific areas of improvement. Three parents increased their rates of praise during tasks during the feedback phase, including Ashton’s parent, who did not increase her praise during the training phase. Benjamin’s parent, who increased praise during training, did not increase praise after receiving feedback. However, she did maintain a level after feedback that was higher than baseline. From training to feedback phase, Caden’s parent increased her mean percent of clear commands during tasks, which she did not do after only receiving the training. Other parents did not show an increase in their clear commands after receiving feedback.

Although parents did not receive feedback on their use of descriptive play statements or praise during play, improvements were noted. Two of three parents increase their use of descriptive play statements during play during the feedback phase. Two parents increased their mean rated of praise during play. Devon’s parent, who increased from baseline to training phase, increased again from training phase to feedback phase. Ashton’s parent, who did not increase praise in either condition from baseline to training, but did increase praise during tasks after feedback, also increased praise during play after feedback.

When all skills were combined to create the variable composite positive parenting practices, mean increases in rate per minute were found for all three parents who had data available for all variables. However, acquisition of specific skills varied across parents. Lerman, et al. (2000) found in their study that feedback was needed for all parents to increase their skills in all areas, which is different from the present study. In the present study, not all parents increased all their skills after the introduction of feedback.
However, in Lerman, et al. the interventions were individualized for each parent and targeted different specific skills for each parent, as opposed to the current study which used one curriculum during training and one format for feedback for all parents.

Despite only receiving feedback on their use of techniques during tasks, parents made improvements in their use of techniques during the play condition. In the present study, after feedback, two of three parents increased their mean rates of praise during tasks and two of three parents increased their mean rates of praise during play. Most of the research on performance feedback has been done with teachers, but findings are relevant to understanding feedback with parents. Myers, et al. (2011) found that when using verbal feedback, teachers needed different levels of feedback intensity in order to change their use of praise. Using a tiered approach, they provided weekly feedback to teachers in the first tier of feedback which included goals and contingent praise when they improved. Teachers who did not improve in the first tier of feedback, moved to the second tier of feedback. They received daily feedback which involved more instruction in addition to the feedback presented in the first tier. Their study indicated that teachers needed different intensities of feedback to reach/maintain criteria levels of the skills learned. Parents may also need varying intensities of feedback. Devon’s parent was showing an upward trend at completion of the study and may have continued to make progress had the feedback continued. The other parents may have needed a more intense form of feedback in order to show similar gains.

However, in a study by Hemmeter, et al. (2011), teachers improved their use of descriptive praise when presented with feedback in the form of a structured email. Each email specifically included what the teacher was doing well, what could be improved and
ways to improve. In a different approach, Reinke, et al. (2007) found that teachers increased their use of praise when presented with feedback in the form of graphs depicting teachers’ use of praise with target students. The approach used by Reinke, et al. was most similar to the performance feedback used in the current study. While Reinke, et al. found that using visual performance feedback (or graphs) was effective with teachers, the current study found mixed results for using graphs with parents. Further, the effects found in Reinke, et al. were more robust than the effects found in the current study. More information is needed on the specific combinations of VPF (Reinke, et al., 2007) and parent training techniques needed for positive parent and child outcomes.

In conclusion, the findings from the present study related to the second research question make an important contribution to the field. Much of the previous research on performance feedback has focused on its effectiveness with teachers. The current study provides initial data on the use of VPF (Reinke, et al., 2007) with IY (Webster-Stratton, 2008) for parents of children with autism. Results for specific variables were mixed, but overall mild improvements in composite positive parenting practices suggest there may be a potential for VPF (Reinke, et al.) for parents of children with autism.

**Does Parent Training in the Core Content of IY Decrease Externalizing Behavior in Children with Autism?**

The purpose of this research question was to determine if children would decrease their externalizing behavior due to parent participation in the IY (Webster-Stratton, 2008) training. Observed changes in target child behaviors varied. All four children actually decreased their mean percents of total compliance from baseline to training phase, but
two children increased their on-task/appropriate behavior. One of the children who increased his on-task/appropriate behavior also increased his independent (unprompted) compliance. The two children who increased their on-task/appropriate behavior had the only two parents who simultaneously showed increases in use of praise during tasks, descriptive play statements during play and praise during play.

Children did not increase their total compliance due to the training, but on-task/appropriate behavior increased for two of the children. A recent study of the IY program also found that children were not observed to reduce their externalizing behavior at home (Reid, et al., 2007). Reid, et al. noted that two-thirds of the children had low baseline externalizing behavior during baseline and there may have been possible floor effects. Similarly, the current study also observed low baseline externalizing behavior and high baseline compliance and observed decreases in mean percent of total compliant behaviors. It is also important to note that parents did not receive the full IY program, but instead a condensed version that was delivered one-on-one instead of in a group format.

Interestingly, the two children who increased their on-task/appropriate behavior had the only two parents who showed increases in their use of praise during tasks and play and descriptive play statements during play. These particular variables may be key in changing child behavior. Other research has noted the importance of these variables for motivating children with autism (Koegel, et al., 1996) and the IY (Webster-Stratton) program notes them as being foundational for working toward changing child externalizing behavior. For example, PRT (Koegel, et al., 1999) is an autism intervention that is typically implemented by parents in natural environments, during naturally
occurring activities, such as play. Activities are carried out within the context of child-directed play and children receive natural reinforcers for appropriate behavior, which includes praise. Moran and Whitman (1991) also found that when mothers increased their use of appropriate prompts and use of rewards, children increased their on-task behavior.

In conclusion, the findings from the current study related to the third research question make an important contribution to the field. Results suggest that children with autism may increase their on-task/appropriate behavior if their parents participate in IY (Webster-Stratton, 2008) training. The current study found that parent changes in behavior were variable, as were child outcomes, suggesting that in the current study, parent behavior mediated child behavior change, which is consistent with other research (Campbell, 1995). However, it is not clear how much behavior change in parents is needed in order to impact child behavior nor how immediate behavior change in children can be expected after behavior change in parents is observed.

**Does Providing Parents with VPF after Receiving Training in the Core Content of IY Decrease Externalizing Behavior in Children with Autism?**

The purpose of this research question was to determine if children would decrease their externalizing behavior due to parent feedback after participating in IY (Webster-Stratton) training. Child behavior change varied across variables from training phase to feedback phase. Three children increased their mean percent of total compliance. The same child who increased his independent compliance during the parent training phase, Caden, also increased his independent compliance during the feedback phase. For the two children who increased their mean duration of on-task/appropriate behavior from
baseline to training, one increased again during feedback and the other stayed the same. Benjamin also increased his duration of on-task/appropriate behavior during feedback.

All parents reported decreased externalizing behavior from baseline to the end of both phases of intervention (IY + VPF) according to the ECBI (Eyberg & Pincus, 1999). Observed behavior from baseline to feedback support increased mean percent of total compliance for three of the four children and increased mean percent of on-task/appropriate behavior for the same three children.

Only one child showed no improvements in either compliance or on-task/appropriate behavior from training to feedback phase. This is consistent with other research that found even when teachers increased their use of the target skills after receiving feedback, not all children decreased their challenging behavior (Hemmeter, et al., 2011). In fact, some teachers needed “extra interventions” to use with their students like visual aids. The child who did not make improvements from training to feedback phase was the child whose parent made the fewest improvements in her use of IY (Webster-Stratton, 2008) techniques learned.

In addition to observing behavior changes from training phase to feedback phase, data were collected on parent report of child changes in externalizing behavior from pre to post intervention (IY+ VPF). The current study found that all four parents reported statistically significant decreases in child externalizing behavior from pre to post intervention. Research on IY (Webster-Stratton, 2008) has found that parents often report decreases in externalizing behavior in their children after participation in IY (e.g., Gardner, et al., 2006; Taylor, et al., 1998). However, the current study did not find notable changes in externalizing behavior (due to floor effects) and only three of the four
children were observed to increase their mean percent of total compliance and increase their mean percent of on-task/appropriate behavior from pre to post intervention (IY+ VPF). Similarly, a research study on IY (Webster-Stratton, 2008) outcomes found that there was a discrepancy between observed behavior change and parent report of behavior change (Reid, et al., 2007) with parents reporting a greater decrease in externalizing behavior than was observed by researchers. Other research has suggested child outcomes are related to parent skill development, not parent perceptions of the program (Gardner, et al., 2006). While it is important for parents to have positive perceptions of the training programs in which they participate, their ability to use the skills learned is what will determine child behavior change. Consistent with Gardner, et al. the current study found that the child who did not increase compliance or on-task/appropriate behavior had a parent who did not show much increase in use of IY techniques when compared to the other parents.

In conclusion, the findings from the current study related to the fourth research question make an important contribution to the field. VPF (Reinke, et al., 2007) may enhance the effects of interventions for children with autism. The results from the current study support the notion that performance feedback may enhance outcomes associated with parent training for child externalizing behavior. However, results varied for specific variables and future research should continue to explore specific aspects of feedback such as format and skills targeted.
Is the Core Content of IY with VPF Socially Valid for Parents of Children with Autism?

The purpose of this research question was to assess the degree to which parents believed the IY (Webster-Stratton, 2008) training and VPF (Reinke, et al., 2007) were socially valid. All parents reported that they found the intervention package socially valid. Use of praise and “help” with play were particularly salient for parents. Two parents reported that they felt the program was individualized despite the fact that the same content was presented to all parents. Suggested changes included having videos that depicted parents interacting with children with autism and the facilitator modeling the skills with the parent’s child.

Overall, parents found the content of the program relevant to their needs. Other research has supported parents’ need for information and training related to addressing their child’s externalizing behavior (Papageorgiou & Kalyva, 2010). Professionals can meet these needs and provide social support, as well. However, as noted earlier, positive perceptions of a training program does not necessarily guarantee changes in behavior (Gardner, et al., 2006). While positive parent perceptions of intervention may be related to positive outcomes, it does not guarantee skill acquisition. Modifications may be necessary for maximizing parent behavior change. Parents provided the valid suggestion of having models that included children who had autism. Parents who have children with autism are aware of the unique challenges their children present (Brookman-Frazee, et al., 2006) and may need to see the techniques they are learning being used with other children with autism in order to learn the techniques themselves. According to social learning theory, part of the motivation for individuals to choose another person to model
because they relate to that person in some way and want to be like that person (Bandura, 1977). This may explain why some parents in the current study noted wanting models involving children with autism. Further, other research (Moran & Whitman, 1991; Smith & Lerman, 1999) has shown modeling with children who have autism to be effective for parents of children with autism.

In conclusion, the findings from the current study related to the fifth research question make an important contribution to the field. It is noteworthy that parents found the intervention socially valid. If parents find the intervention relevant and satisfying in addition to experiencing some changes in their behavior and their child’s behavior, then there is support for continued research related to evaluating IY (Webster-Stratton, 2008) and VPF (Reinke, et al., 2007) for improving parent and child outcomes. Other research has documented the importance of social validity in intervention (Wolf, 1978). In addition, when parents are satisfied with an intervention, they are more likely to maintain participation and continue to carry out the techniques once the training has ended (Gersten, Chard & Baker, 2000). Future directions for research are discussed later in the discussion.

Limitations

As with all studies, this study has some limitations. The first limitation is the adaptations that were made to the IY (Webster-Stratton, 2008) program. The program was designed to be conducted in a group format and part of the noted strength and success with the program has been its group format (Webster-Stratton). The purpose of this study was to evaluate the core content with a group of participants whom the research has not reported effects for, not the overall program, and therefore conducting
the sessions in a one of one format was appropriate and necessary. However, it should be noted that the group format could potentially enhance effects for parents and children. In addition to adapting the format of the program, the content was also condensed. Most research on the program has evaluated the program with 12 or more sessions (e.g., Webster-Stratton, et al., 2001; Webster-Stratton, et al., 2004), though effects with participation in as few as six sessions has been documented (Reid, et al., 2007). It is likely that parents and children could benefit from receiving the parent training over a longer period of time with more sessions than were provided in this study.

A second limitation is that the children were observed to have high levels of compliance and on-task behavior during baseline, leaving little room for observed change. Despite parent reports of high levels of externalizing behavior at referral and parents’ continued reports of externalizing behavior during baseline, the children continued to display relatively high levels of compliance and on-task behavior during observations. It is possible that the children were “performing” for the camera during the direct observations.

A third limitation is the small sample size. As with all single-subject research, it should be noted that this study gives preliminary information about the outcomes related to IY (Webster-Stratton, 2008) and VPF (Reinke, et al., 2007) for families of children with autism. Future studies are needed that address the concerns noted above.

**Future Directions**

This study was one of a few to evaluate IY (Webster-Stratton, 2008) with children who have developmental disabilities and the only one specifically targeting children who have autism. Future research should continue to assess the utility and effectiveness of the
IY (Webster-Stratton) program for families who have children with autism. Focus should be on determining what, if any, autism-specific material needs to be added to the program. In addition, it should be determined if all units of the program are appropriate for families who have children with autism (such as the timeout unit).

Future research should also examine variables associated with the delivery of IY (Webster-Stratton, 2008). Identifying parameters for dosage could help maximize outcomes and minimize resources needed to carry out intervention (Webster-Stratton, et al., 2004). Specific areas to consider include number of sessions, length of sessions and number of total weeks of intervention that maximizes outcomes for parents and children. In addition to determining optimal dosage, delivery method should also be evaluated. Specifically, providing the IY (Webster-Stratton) in a group format may have advantages over one-on-one, such as increased social support for parents and the ability to reach more parents at one time (Webster-Stratton, 1982).

Performance feedback should also be further explored with parents. More research is needed to identify the most effective type of performance feedback for parents. Feedback may need to take different forms, such as written or verbal, for different parents. Some parents may need feedback in conjunction with training (as opposed to after the training) or some parents may need different intensities of feedback (e.g. with and without additional instruction). Additionally, parents may benefit from completing a screener to help parent trainers identify which behaviors parents are aware of needing to change which ones they are not. This could help parent trainers tailor the feedback intensity for different behaviors.
Conclusion

Identifying effective parent training programs is necessary for addressing externalizing behavior in children with autism. The current study evaluated the effectiveness of the core content of IY (Webster-Stratton, 2008) with and without VPF (Reinke, et al., 2007). Results varied, but yielded mild improvements in parents’ use of positive parenting practices and mild improvements in child compliance and on-task/appropriate behavior. Social validity for the program was high. Future research should continue to explore the use of IY (Webster-Stratton) and VPF (Reinke, et al.) with parents of children with autism.
APPENDIX A

Glossary

**Externalizing Behavior**: broadly refers to a range of behaviors including aggression toward others, self-injury, property destruction, defiance, yelling, hyperactivity or impulsivity. Research also uses the terms behavior problems and disruptive behavior disorders.

**Incredible Years (IY) parent training program**: is a program targeting parents of children with early signs of conduct disorder using techniques based in social learning theory (Webster-Stratton, 2008).

**Multiple Baseline**: refers to a single-subject research design in which interventions are introduced to each baseline at different points in time (in this case, across participants) to assess changes due to the intervention (Kazdin, 1982).

**Performance Feedback**: includes visual, verbal and video feedback as mechanisms for reporting treatment integrity to individuals carrying out interventions.

**Social Validity**: refers to the acceptability of an intervention and its outcomes for the individuals participating (Wolf, 1978).

**Visual Performance Feedback (VPF)**: is a specific type of feedback that involves providing individuals with their treatment integrity information via graphical depictions (Reinke, et al., 2007).
Support Coordinators,

Thank you for taking the time to help with recruitment of families in need of behavioral services. Below are the screening criteria for determining if your client may be eligible for participation in this study.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Check if Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The child is between 4 and 8 years old.</td>
<td></td>
</tr>
<tr>
<td>2. The child has a diagnosis of autism.</td>
<td></td>
</tr>
<tr>
<td>- Autism Diagnostic Interview</td>
<td></td>
</tr>
<tr>
<td>- Autism Diagnostic Observation Schedule</td>
<td></td>
</tr>
<tr>
<td>- Other ____________________________</td>
<td></td>
</tr>
<tr>
<td>3. The child’s parent reported the following behaviors in the past six months:</td>
<td></td>
</tr>
<tr>
<td>- Aggression toward others (hitting, kicking or biting others)</td>
<td></td>
</tr>
<tr>
<td>- Self-injury (hitting, kicking or biting self)</td>
<td></td>
</tr>
<tr>
<td>- Property destruction (throwing, punching, hitting, kicking or breaking objects)</td>
<td></td>
</tr>
<tr>
<td>- Defiance (repeated refusal to follow directions)</td>
<td></td>
</tr>
<tr>
<td>4. The child has a Vineland score between 45 and 85.</td>
<td></td>
</tr>
<tr>
<td>5. The child has a Vineland age equivalent of 3 years in the area of communication.</td>
<td></td>
</tr>
</tbody>
</table>

If you checked “yes” for all five criteria, then you may contact parents to see if they are interested in participating in this study. Attached is a script to use to explain the project to families who have met the screening criteria.
You could benefit from participating in this research project! The research is the dissertation of Tia Schultz under the advisement of Dr. Stichter at the University of Missouri. The research project will be evaluating the effectiveness of a parent training program. The parent training program targets challenging behavior and will take place in your home during Summer/early Fall 2010.

Eligibility criteria include:
- Your child is 4-8 years old
- Your child has a diagnosis of autism
- Your child has had one or more of the following behaviors in the past six months:
  - Aggression toward others (hitting, kicking or biting others)
  - Self-injury (hitting, kicking or biting self)
  - Property destruction (throwing, punching, hitting, kicking or breaking objects)
  - Defiance (repeated refusal to follow directions)

Benefits for your family may include:
- Gaining new skills for working with your child
- Improving your relationship with your child
- Decreasing your child's challenging behavior

Participation will involve:
- Visits from parent trainers twice a week ranging from 15 minutes to 1 hour
- During the visits:
  - You will be observed interacting with your child
  - You will receive information about dealing with misbehavior and supporting positive behavior
  - You will watch short videos of other parents with their children

If you are interested contact Tia Schultz at: trs4g2@mail.missouri.edu or 573-268-2323.
Thank you!
APPENDIX D

Script for Contacting Families about the Study

Hello! I am calling you because you and your child may qualify for a research study, which will provide free parent training for supporting your child’s positive behaviors. The parent training would involve two parent trainers coming to your home to work with you on learning techniques for increasing your child’s positive behaviors and decreasing your child’s problem behaviors. Your participation would last approximately 12 weeks. If you give your verbal consent to be contacted, I will give the researcher, Tia Schultz, your contact information. Giving verbal consent to me does not obligate you to participate in the study. Your verbal consent is only to allow me to give your contact information to the researcher. She will then contact you with more details about the study and to make sure you are eligible.

➢ Do I have your permission to give Tia Schultz your contact information?

☐ Yes ☐ No Date/time ____________________

➢ When is the best time for her to contact you?

☐ Morning ☐ Afternoon ☐ Evening

If you have any questions, you may contact Tia Schultz directly at 573-268-2323 or trs4g2@mail.missouri.edu. Thank you!
Dear Parent or Guardian,

My name is Tia Schultz. I am a doctoral student in the Department of Special Education at the University of Missouri. You are invited to take part in a research study titled, “Evaluating the Effectiveness of a Modified Version of the Incredible Years with Parents of Children with Autism.” The study provides training for parents who have children with autism and challenging behaviors. The training is based on The Incredible Years (IY) parent training program. IY is a program created to train parents to support their child’s positive behaviors and decrease challenging behaviors. The goal is to improve your interactions with your child and decrease his/her challenging behaviors.

Participation involves the following:

- To determine eligibility, you will take one to two assessments:
  - Eyberg Child Behavior Inventory (ECBI) to assess your child’s behavior.
  - Autism Diagnostic Inventory-Revised (ADI-R) to verify your child’s autism diagnosis (if needed).
- The study will last about 12 weeks.
- You will meet with me and other study volunteers in your home. Visits will be twice a week ranging from 15 minutes to 1 hour.
- During the visits:
  - you will be observed interacting with your child.
  - you will receive information about dealing with misbehavior.
  - you will watch short videos of parents with their children.
  - you may be videotaped.
- At the end of the study you will be asked to complete a satisfaction survey.
- All data collected will be kept confidential. Only I will have access to it. Data will be stored securely. Videos will only be viewed by the research team for coding purposes and will be destroyed at the end of seven years.
- Your participation is completely voluntary. You may quit at any time. Your decision about participation will not affect your relationship with the University of Missouri or Boone County Family Resources.
- There are no known risks related to this study aside from any discomfort you may feel due to being observed.
- Benefits may include:
  - gaining new skills for working with your child.
I can be reached at 573-268-2323 or trs4g2@mail.missouri.edu. My advisor, Dr. Janine Stichter, can be reached at stichterj@missouri.edu. The Campus Institutional Review Board for the University of Missouri can be reached at 573-882-9585.

Thank you very much! I look forward to working with your family.

Sincerely,

Tia Schultz
Evaluating the Effectiveness of a Modified Version of the Incredible Years with Parents of Children with Autism

Participant Consent for Participation

Please read the statements below about your choice to be a part of the Evaluating the Effectiveness of a Modified Version of the Incredible Years with Parents of Children with Autism study. Write your initials next to the statement that describes your choices about being in this study.

I have read about the study. I have had a chance to ask questions and get answers about being a part of this study. I have decided that,

_____ I agree to be a part of this research project. I know that my participation is voluntary and that I can change my mind about being a part of this study at any time.

_____ I agree to allow my child to participate in this research project.

_____ I agree to allow the research team to videotape my child and me during our sessions.

_____ I do not agree to allow videotaping in my home.

_____ I do not agree to be a part of this research project.

________________________________________________________________________

Participant (Parent) Signature ____________________________________________

Participant (Parent) Printed Name __________________________________________

________________________________________________________________________

Date ____________________________
APPENDIX F

Sample Visual Performance Feedback (VPF) Handout for Parents
APPENDIX G

Social Validity Measure

1. I gained knowledge about dealing with my child’s disruptive behaviors during the course of this parent training program.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

8. I learned a lot about the way I parent during this parent training program.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

9. I have made changes to the way I interact with my child.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

10. My child has shown a decrease in his/her disruptive behaviors.

    | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
    |----------------|-------|---------|----------|-----------------|

11. I enjoyed participating in the parent training program.

    | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
    |----------------|-------|---------|----------|-----------------|
12. Participating in this program was a good use of my time.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

13. I would recommend this program to other parents.

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

14. Things I *liked* about the *style* of the program:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

15. Things I would *change* about the *style* of the program:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

16. Things I *liked* about the *content* of the program:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

17. Things I would *change* about the *content* of the program:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________

18. The most important things I learned from participating in the program:

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
REFERENCES


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VITA

Tia Schultz completed her undergraduate education at the University of Wisconsin-Green Bay with a double major in Psychology and Human Development. She received her Master’s degree in Human Development and Family Studies at the University of Missouri. She then began her doctoral studies in Special Education at the University of Missouri. Her focus was Behavior Disorders and Autism with her outside area through the School Psychology and Counseling Psychology Departments. During her time as a student, Tia provided behavioral intervention to children, as well as social skill intervention, both in one on one and in group formats. Tia also provided parent education to families in one on one and group formats and provided consultation to school staff on behavioral intervention. After graduation, Tia will begin a Postdoctoral Fellowship at the FPG Child Development Institute at the University of North Carolina-Chapel Hill focusing on autism intervention. Her research interests include social/behavioral intervention for children with behavior disorders or autism and parent training.