Spring 2018

Applied behavior analysis function based procedures contribute to parent child interaction therapy child outcomes

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Applied Behavior Analysis Function-Based Procedures Contribute to
Parent-Child Interaction Therapy Child Outcomes

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A thesis submitted to the Graduate Faculty of

JAMES MADISON UNIVERSITY

In

Partial Fulfillment of the Requirements

For the degree of

Master of Arts

Department of Graduate Psychology

May 2018

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Dedication

I dedicate this thesis to my wonderful supportive family, friends, colleges, and mentors throughout my six years spent here at James Madison University. My parents continuously supported me in every aspect, my friends stood by my side and cheered me on, and my boyfriend encouraged me to reach every goal I set for myself. I thank you all and cannot express enough how much every kind word helped me along this journey.

Acknowledgements

I would like to thank Dr. Trevor Stokes for not only being my thesis committee chair and allowing me the opportunity to pursue a Master's degree, but also for his endless support. The late Tuesday nights filled with intervention procedural brainstorming, positivity, and countless laughs were very much appreciated.

Thank you to my research assistant team consisting of Alexa Ina, Allison Brandmark, Emily Knox, Emory Bruno, and Katie Witt. I could not have completed my thesis data collection and analysis without this well-oiled machine of a research team.

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Abstract

Developmental disabilities affect nearly one in six children in the United States; up to 30 % of these individuals have problem behaviors causing stressors in both the child and their caregiver's lives. These problem behaviors have various topographical and functional forms, such as property destruction, aggression, tantrums, self-injurious behavior, and many others. If these behaviors are not nipped in the bud during younger years they have the capability to bring about academic failure, alienation from typical peers and other adults, and in the longer term, substance abuse issues, and a decrease in functioning skills within their communities. Evidence-based practices are shown to be effective for treating problem behaviors for children with developmental disabilities. These effective interventions can change the environment, making behavior more socially acceptable and can be implemented by various individuals in the child's life.

This study utilized a multi-element and multiple baseline across participants, single-case research design to examine the effects of a function-based intervention (FBI) and Parent-Child Interaction Therapy (PCIT) on child behavior outcomes. The current study examined two therapist/child dyads; both child participants were diagnosed with a developmental disability. The researcher coached the therapists on both FBI and PCIT techniques, monitoring and providing feedback on their skills while interacting with the child. researcher assistants observed a decrease in child disruptive behaviors and an increase in target appropriate behaviors during the PCIT conditions, but a stronger change in behavior level during the PCIT+FBI condition.

Literature Review

Developmental Disabilities

Developmental Disabilities (DDs) are typically diagnosed during early childhood

and can impact a person's life in various ways. DDs are a collection of disorders due to

deficiencies in communication/language growth, physical development, education areas,

or behavior skills and abilities. The Centers for Disease Control and Prevention (CDC)

estimates one in six children in the United States are diagnosed with a DD or another

developmental delay (Centers for Disease Control and Prevention, 2016). DDs are

apparent across all ethnic and racial backgrounds, as well as all socioeconomic classes.

Staying active as a member in the community is important for all children and adults

living with and without disabilities (CDC, 2016).

Autism Spectrum Disorder (ASD) is a developmental disability characterized by

significant social, language, and behavior deficits. All causes of ASD are unknown, but it

appears to be a combination of genetic, environment, and biological elements. Individuals

with ASD learn, attend, or respond to stimuli in various ways. The CDC estimates one in

68 children have an ASD diagnosis. Treatment for ASD includes many various strategies

but behavior and language approaches with direct instruction, organization, and structure

help children with ASD the most (CDC, 2016). Oppositional Defiant Disorder (ODD) is

the misbehavior of children to the extent that it causes major issues in a variety of

settings. This misbehavior can be seen at school, with peers, or with parents at home

(CDC, 2016). These ongoing defiant behaviors do not have a cause, but biological,

psychological, and social factors play a role. The American Academy of Child and

Adolescent Psychiatry (AACAP) estimates one to 16 % of elementary aged children and

adolescents have ODD. Treatment for ODD includes parent management training,

individual/family psychotherapy and medication (AACAP, 2014).

Behavioral Deficiencies

Problem behaviors are apparent across many individuals with developmental

disabilities, including both ASD and ODD. 13 to 30 % of young children engage in

problem behaviors to the extent of an intervention being needed (Horner, Carr, Strain,

Todd, & Reed, 2002). In addition to many core characteristics of children with ASD,

severe behavioral problems such as tantrums, aggression, and self-injurious behavior

(SIB) are emitted as well. These behavioral deficiencies are stressors for both educators

and parents (McCracken et al., 2002). Schools across the country are witnessing children

at a very young age who are aggressive, have behavior challenges, who are at risk for

academic failure, alienation from typical peers and other adults, and in the long term,

substance abuse issues, and a decrease in functioning skills for the community

(McDougal & Hiralall, 1998). Many parents think their young children will grow out of

problem behaviors as they mature, but this is not always the case with developmental

disabilities. These problem behaviors are maintained by a specific function and will not

likely decrease without an intervention (Horner et al., 2002).

Basic behavioral interventions using reinforcement were used for children

beginning in the 1960s, gained attention in the 1970s, and were reported clinically in the

Journal of Applied Behavior Analysis from 1968 until the present (Baer, Peterson, &

Sherman, 1967; Baer & Sherman, 1964; Bostow & Bailey, 1969; Horner, Carr, Strain,

Todd, & Reed, 2002).

A Functional Approach

Individuals working with children who have special needs (Psychologists and

Board Certified Behavior Analysts) implement data driven, evidence-based practices in

assessment procedures and treatment interventions. Functional assessments are evidence-

based practices; researchers have shown them to be effective when treating individuals

with ASD (Autism PDC, 2014). ABA is the systematic application of interventions based

on learning theory principles to increase socially significant behaviors (Baer, Wolf, &

Risley, 1968). Basic behavior principles create the foundation of ABA.

Behavior and its consequences within the environment are "cause-and-effect"

relationships, which was termed *functional analysis* by B.F. Skinner (Skinner, 1953;

Hanley, Iwata, & McCord, 2003). From the behavior analytic perspective, the word

function has two meanings. First, the purpose which the behavior serves, and second, a

relation between a class of behaviors and the environment. Behavioral intervention

proves to be effective for reducing problem behavior (Hanley, Jin, Vanselow, &

Hanratty, 2014). Several cutting edge studies on environmental influences in regard to

behavior have laid the groundwork for what the behavior analytic world describes as

functional analysis methodology (Hanley et al., 2003). Lovaas, Freitag, Gold, and

Kassorla (1965) and Lovaas and Simmons (1969) showed the effects of social attention

as reinforcement contingent on SIB for children with mental disorders. Guess, Sailor,

Rutherford, and Baer (1968) demonstrated negative reinforcement (escape from task of

verbalizing plural morphemes) maintains tantrum behavior in children with mental

disorders. Weeks and Gaylord-Ross (1981) also demonstrated escape as a function of

behavior with the contingent removal of difficult tasks following SIB. Carr, Newsom,

and Blinkoff (1980) showed aggressive behavior can have more than one controlling

variable. The results suggested aggression can function as an escape response, controlled

by preferred reinforcers to weaken the aversiveness of the demands placed, and

strengthen other nonaggressive escape responses. It can also be controlled by an escape-

extinction procedure. Stokes and Osnes (1985) demonstrated self-abuse behaviors (head

banging, back hitting, and hand biting) and other behaviors typically associated with

ASD (aggression, destructive behaviors, and tantrums) can be improved significantly

through an analysis of functional contingencies. The self-abuse behaviors occurred when

staff did not comply with what the child wanted, to escape a demand, and to access

attention as a reinforcer. Attention was also hypothesized to serve as the function of

tantrum-like behaviors such as crying and whining for one child. These functional

contingencies are also essential to the development and implementation of treatment

packages (Stokes & Osnes, 1985).

Iwata, Dorsey, Slifer, Bauman, and Richman (1982) found data to support the

functional characteristics of SIB and proposed a behavioral assessment procedure, which

is called a functional analysis (FA). This study had nine participants with some degree of

developmental delay and were treated at The John F. Kennedy Institute affiliated with

The Johns Hopkins University School of Medicine. Each participant emitted SIB,

consisting of two or more topographies, at high frequencies. Observers coded each

session for the occurrence or nonoccurrence of SIB using continuous 10-second intervals.

Eight out of nine participants experienced four different conditions systematically in a

multi-element manipulation. The ninth participant was a pilot who experienced three out

of four experimental conditions. The order of conditions was random and lasted

approximately 15 minutes (Iwata et al., 1982). In the social disproval condition, the

experimenter and participant entered the room; the experimenter presented various toys

within the participant's reach. In the behavior analytic world today, this condition is

called the attention condition. The experimenter instructed the participant to, "play with

toys." The experimenter provided attention contingent on SIB in the form of, "Don't do

that, you're going to hurt yourself"; "Look at your hand, don't hit yourself" and positive

touch on the shoulder. The experimenter ignored all other behaviors emitted by the

participant. In the academic demand condition, the experimenter presented the participant

with learning trials using a three-prompt procedure; verbal prompt, wait five seconds;

verbal prompt and model, wait five seconds; then full-physical prompt. Social praise was

provided, contingent on completion regardless of the prompt needed. The experimenter

ended the trial and turned away from participant for 30 seconds contingent on SIB (Iwata

et al., 1982). In the behavior analytic world today, this condition is called the escape

condition. In the unstructured play condition, the experimenter presented various toys

within the participant's reach and sat within one meter of the participant. The

experimenter delivered social praise and brief positive touch when the participant emitted

appropriate behavior (absence of SIB) at least one time during every 30-second interval.

SIB was ignored until the experimenter felt it necessary to end the session (Iwata et al.,

1982). In the behavior analytic world today, this condition is called the control condition.

In the alone condition, the experimenter sat the participant in the therapy room without

toys or other accesses to stimulation. Results showed variability between participant's

mean %age of intervals containing SIB, and within participants across conditions (Iwata

et al., 1982). In the behavior analytic world today, this condition is called the automatic

reinforcement condition. The first pattern of responses was low in the unstructured play (*control*) condition. A second pattern of response found SIB greatest in the alone (*automatic reinforcement*) condition. The third pattern of responses showed little to no instances of SIB in the demand (*escape*) condition. Furthermore, the occurrence of SIB is varied both between and within participants and associated with a specific stimulus condition. This demonstrates empirical evidence that SIB may be a function of various forms of reinforcement (Iwata et al., 1982). Treating behavior using a functional approach is important for effective modification and teaching desired behaviors.

Behavioral interventions reduce problem behavior more effectively when using a functional analysis (Hanley et al., 2014). From 1982 until 2013, the FA procedure has been replicated in over 2,000 articles and chapters (Beavers, Iwata, & Lerman, 2013). The FA procedure consists of observation and measurement of the problem behavior in multiple contexts where the practitioner has experimental control of the variables thought to be maintaining the problem behavior (Hanley et al., 2003). Hanley (2012) describes nine implementation obstacles of a functional analysis: FAs take too much time, are too complex, too risky for both the client and implementer, difficult to 'sell' to other caregivers, cannot be used for dangerous problem behavior, cannot address low-frequency behavior, cannot address covert problem behavior, cannot address various topographies and functions of problem behavior, and cannot address problem behavior maintained by constantly changing reinforcers. A similar systematic approach to determine function of behavior (descried below) is just as effective and less time consuming, yet still demonstrates an efficient scientific manipulation of conditions that can produce similar results.

Hanley et al. (2014) described an effective, efficient, scientifically rigorous,

parent approved, and much simpler treatment method for defining the function of

behavior for three children with ASD; a *synthesized functional analysis*. Typical PCIT

procedures do not include any formal functional assessment, primarily because of time

constraints and behavior analysts do not typically conduct this therapy. Most problem

behavior emitted by children serve two main functions: attention and/or avoidance

(McNeil, Filcheck, Greco, Ware, & Bernard, 2001). The other two functions of behavior

are not addressed throughout the PCIT procedure. The following synthesized method

eliminates the time constraint issue and explores the other two possible functions of

problem behavior.

In this study, the researcher started with an open-ended interview to assist parents

to hone in on contingencies observed at home. The questionnaire asked about current

participant abilities, problem behavior, settings where problem behavior occurs most, and

how the parents respond to the problem behavior (Hanley, 2012; Hanley et al., 2014).

Hanley (2012) describes two forms of indirect measurement used during the open-ended

interview. The first measurement technique is the Motivation Assessment Scale (MAS).

This scale assesses the motivators and possible factors reinforcing the problem behaviors.

The MAS consists of 16 questions describing situations where the problem behavior

might occur, which can be answered on a scale from 'never' to 'always' (Durand &

Crimmins, 1985). The second form of indirect measurement Hanley (2012) describes is

the Questions About Behavioral Function (QABF). This questionnaire contains 25

questions about various situations where problem behavior might occur, which are scored

on a scale of 'doesn't apply' to 'often' (Paclawskyj, Matson, Rush, Smalls, & Vollmer,

2000). *See Appendix A for indirect measures.*

Researchers conducted a 20-minute observation of the participant after the open-

ended interview with the parents which lasted 30 minutes. The observation consisted of

the clinician taking a language sample and identifying problem behaviors. Following this,

researchers conducted the synthesized FA that consisted of alternating test and control

conditions. Researchers initiated the test with a control condition, where the participant

had full access to reinforcers. During the test condition these reinforcers were removed

every 30-seconds and returned contingent upon problem behavior. Non-reinforcing

materials were available to the participant during both control and test conditions. After

researchers conducted the synthesized FA they used these results when implementing a

behavioral procedure to teach functional communication training and delay tolerance

skills.

Results from the previous study showed the function of the first participant's

problem behavior was a combination of access to tangible items and social attention from

her mother. The function of the second participant's problem behavior was social positive

and negative reinforcement contingencies. The function of the third participant's problem

behavior was social negative reinforcement, positive reinforcement, or some combination

thereof. All three children acquired many important social skills. Results showed this

abbreviated functional assessment process was effective to identify function of behavior

and use with other behavioral interventions to eliminate problem behavior and teach

important social skills (Hanley et al., 2014).

Relationships, Attachment, and Parent-Child Interaction Therapy (PCIT)

Parental involvement during the behavioral intervention process has many

benefits, such as skill acquisition, increase in self-esteem/confidence, and reduced stress

for both the parent and child involved. Allowing the parent to be involved as a 'co-

therapist' enriches social relationships for the child (McConachie, & Diggle, 2007).

Parents are often on the go with their children and rarely stop to think about what they

say or how they say it, but these positive parent-child interactions are vital for

relationship development. Giving caregivers the tools to success for behavior change

often leads to positive behavioral patterns in their children. Effective interventions can be

implemented by various caregivers such as parents, other family members, teachers,

behavior analysts, and speech-language pathologists (Lang, Machalicek, Rispoli, &

Regester, 2009). Singh et al. (2006) found a mother's mindfulness of parent-child

interactions decreased child aggression, non-compliance, and self-injury in their children

with ASD. Mindfulness of interactions also increased motherly satisfaction with

parenting skills and increased interactions. This study defined mother's mindfulness

using the Subjective Units of Use of Mindfulness (SUUM) scale. The mothers rated their

mindfulness each week on a scale from zero to 100, zero meaning no use and 100

indicating total use (Singh et al., 2006).

Many parent-child attachment models are present in the research today. Eyberg,

Nelson, and Boggs (2008) discussed three parenting models that were efficacious in

treatment; PCIT, Parent Management Training Oregon Model (PMTO), and the Positive

Parenting Program (Triple P). Bernard and Louise Guerney developed filial therapy in

the 1960s, which is a special method of play therapy, consisting of groups of six to eight

parents conducting play sessions with their young children. This therapy style was modeled after client-centered play therapy. After the completion of this training, therapists entered the families' homes for subsequent sessions (Guerney, 1964). Discussion about parent-child relationships and child fantasy took place during these feedback sessions. PCIT incorporates many characteristics of filial therapy into their procedures, such as a play-based interaction style, positive regard to behavior, and general feedback about parent-child interaction (Eyberg, 1988).

Constance "Connie" Hanf created a two-stage model of training which became central to the literature that followed, specifically in the formal development of PCIT (Reitman & McMahon, 2013). Her model consisted of the first stage, "Child's Game" where parents were trained on allowing the child to lead the play throughout these sessions. This stage was more of a free play. The key behavioral strategy implemented in this scenario was a differential attention procedure. The parents provided the child with positive attention in the form of descriptive statements and rewards (verbal and physical), while they selectively ignored inappropriate (non-aggressive) behaviors (Reitman & McMahon, 2013). This procedure of selectively ignoring inappropriate behavior in the ABA world is *extinction* (removal of attention as a reinforcer) to decrease the frequency of these behaviors. In this stage, parents deliver social consequences when they deem appropriate and withhold social consequences when inappropriate behavior is emitted. In this model, the researchers assumed the function of all inappropriate behavior is attention without any formal analysis. The second stage, "Mother's Game" consisted of the mother leading play, providing the child with instructions and praise for child compliance or timeout for child non-compliance. Hanf used a bug-in-the-ear training technology to

coach parents through these interactions and provided feedback in the moment, as did

PCIT literature (Eyberg, 1988; Reitman & McMahon, 2013).

During the 1970s, Shelia Eyberg and colleagues developed PCIT as a behavioral

family therapy approach for treating young children and their parents. PCIT encompasses

key features from both the aforementioned styles, such features like attachment, positive

relationship building, client-centered therapy, and positive social consequences expanded

into more operant techniques. Similar to the Hanf two- stage-model, PCIT is also a two-

stage model of treatment procedure. PCIT is a direct form of measurement, which means

the parent-child dyads are being observed by other therapists. Both parent and child

behaviors are measured directly using a Dyadic Parent-Child Interaction System (DPICS)

where each behavior is operationally defined with an observable, measureable, and

precise topography (Eyberg, 1988; Baer, Wolf, & Risley, 1968). PCIT uses the Eyberg

Child Behavior Inventory (ECBI) periodically throughout therapy to determine how

parents identify the intensity of child behaviors; this is the *only* measure of problem

behavior. The Child Behavior Checklist (CBCL) is also used to measure problem

behaviors the child emits from the parent's perspective (Eyberg & Funderburk, 2011).

These are both indirect measures of child behavior, although direct measures of behavior

are more accurate. Baer, Wolf, and Risley (1968) discuss the key dimensions of applied

behavior analysis and identifying/defining behavior and scoring child behavior directly;

both fall under the *behavioral* dimension. Parental opinion on disruptive behavior is vital

for intervention to be effective, but a direct measure shows a better representation of what

is occurring in the environment. The treatment is impactful if the parents label it as

meaningful in their environment. This key dimension is *effective* (Baer, Wolf, & Risley,

1968).

PCIT is separated into two main treatment phases in which parents are coached on various skills. The first phase of treatment is Child Directed Interaction (CDI). The goal of this phase is to improve the quality of the parent-child interactions using attention and reinforcement (Eyberg & Funderburk, 2011). The parent is instructed to allow the child to lead play throughout all CDI sessions. Building rapport with the child is important in creating long lasting effects and compliance in the later phase of treatment. The parent is taught to use their attention as a form of discipline for the child without placing any demands or tasks during CDI sessions by selectively ignoring undesired behaviors. The parent is instructed to incorporate "Do" skills into their play to enhance this parent-child interaction. The acronym taught to the parents for "Do" skills is P.R.I.D.E: praise appropriate behaviors, reflect appropriate child verbalizations, imitate appropriate child play, describe the child's appropriate motor play, and display enjoyment/ enthusiasm during the interaction. During the CDI phase of treatment, parents are also taught to avoid "Don't" skills: criticism toward the child, questions, commands placed during the play, sarcasm, and negative physical behaviors. The parent is coached on both "Do" and "Don't" skills during this phase of treatment using a wireless headphone through a one-way mirror (Eyberg & Funderburk, 2011).

The second phase of treatment is Parent-Directed Interaction (PDI). The goal of this phase is for parents to lead their child's activity in a play setting that will later generalize to real-life scenarios where compliance is important. The parent is coached on giving instructions and following through with commands while providing various

consequences. Parents are taught to provide a command and wait five seconds. If the

child does not comply, provide the prompt again. If the child still does not comply, then a

time out from positive reinforcement procedure is implemented. If the parent provides a

command, and the child complies immediately, the parent is instructed to provide verbal

and/or physical positive praise (Eyberg & Funderburk, 2011). This procedure, from an

operant perspective, creates stimulus control over the child with the parent commands

due to a reinforcement history (Cannady, Stokes, Rigg, & Brittain, 2015). A homework

sheet is given to the parents during both CDI and PDI phases of treatment to enhance

generalization of these "Do" skills across settings. This is a "train and hope" technique of

generalization where the skills taught to the parents during training will occur later in

other settings such as the home, without a systematic approach (Eyberg & Funderburk,

2011; Stokes & Osnes, 1989, Stokes & Baer (1977).

The PCIT literature is prominent for children ages two through seven with

disruptive behaviors, and shown to decrease these behaviors and parental stress, while

increasing positive parenting behaviors and child self-esteem. From the author's

knowledge, PCIT literature tends to focus on the behaviors of children with ODD and

typically developing children, but is expanding to children with other DDs. Solomon,

Ono, Timmer, and Jones (2008) found a decrease in group parent perceptions of child

problem behaviors for boys aged five through 12 with high functioning ASD. Solomon et

al. (2008) used a modified version of PCIT. During the CDI phase of treatment, the coach

led the parent through play by verbalizing precisely what to say to the child. After the

coach deemed the parent proficient in these skills, they focused reinforcement on praise,

descriptions, reflections, and ignoring undesired behavior. This study deviated from

typical PCIT protocol by discussing topics/interests that the child is fixated with. Parents

were coached to not mention these focused (circumscribed) interests. A second variation

from protocol PCIT was directing the children during the CDI phase of treatment. Instead

of child-led play, if the child played in isolation the parent was directed to lead (Solomon

et al., 2008). Intense/focused interests and deficiencies in social play are characteristics of

many children with ASD. The only function of behavior coached for in this study was

attention. Results showed an increase in shared positive affect in the parent-child pair.

Between the first and last phases of PCIT treatment, parent positive affect increased. This

measurement was related to an improvement in problem behaviors and child adaptive

skills (Solomon et al., 2008).

Lesack, Bearss, and Celano (2014) used a modified version of PCIT to treat a

five-year-old male with ASD with various disruptive behaviors including noncompliance,

tantrums, self-injury (hand to head), aggression, and other dangerous behaviors (climbing

on counters/appliances, unscrewing light bulbs, eloping in public). The ECBI score was

the only measure of problem behaviors. The adaptions used during CDI for the child in

this study were the use of toys with low perseveration rates that remained in line with the

manual, and the therapist only coached mom to reflect apparent and appropriate

communicative intent (ignoring stereotypic verbalizations). The adaptions made during

PDI for the child were using his name before placing a direct command on him to get his

attention, a 'teaching phase' of least-to-most-prompting during command sequences

incorporating a model, therapists coached mom on only giving Kevin two commands

(giving mom an item-for noncompliance and telling the child to sit next to mom-for

elopement), and adjusting the time-out length and location. Result showed a successful

implementation of a modified PCIT procedure for a child with ASD and disruptive

behaviors. Parents reported a significant reduction in problem behaviors, but these are not

measured directly.

Little modification is needed to PCIT procedures for children with DD. Praise

needs to be more direct for children with DD compared to typically developing children.

For example, instead of the parent verbalizing, "I think it's wonderful that you are using

your manners," they should say, "Thank you for saying please" (McDiarmid & Bagner,

2005). Just like the necessity for praise to be more direct, behavior descriptions need to

be clear and combined with gestural prompts. This provides the child with DD an

opportunity to learn correct word use. Additionally, instead of the parent verbalizing,

"You are putting all the animals in the barn," they can say, "You are putting the pig

(point), the cow (point), and the chicken (point) in the barn (point)." Finally, commands

need to be short and concrete to expand their comprehension of the command. Instead of

the parent verbalizing, "Please move the blue block out from the chair," they should say,

"Please pick up the blue block (point)" (McDiarmid & Bagner, 2005).

A clinical case study found PCIT can be beneficial for increasing appropriate

behavior for children with DD (McDiarmid & Bagner, 2005). Treatment was successful

for a three-year-old male with problem behaviors (e.g., biting, hitting, kicking) and

limited communication capabilities. This child fell in the moderate Intellectually

Disabled (ID) range and met criteria for ODD. After five CDI and nine PDI sessions, the

child was found to be in the normal range for the behavior, according to the ECBI, and no

longer met ODD criteria (McDiarmid & Bagner, 2005). From the author's knowledge,

there have been studies on parent training for behavior management, but no research

published on function-based training interventions targeting disruptive behaviors emitted

in children with DD (Lerman, Swiezy, Perkins-Parks, and Roane (2000); McDiarmid &

Bagner, 2005). Lerman et al. (2000) trained three mothers on interventions regarding

responses to problem behavior, using differential reinforcement, and using instructional

prompts. Parent training entailed individualized written and verbal instructions based on

each child's behavior. Results showed all three parents met performance criterion for

each skill after training and corrective feedback. The % of intervals containing

inappropriate behavior decreased by an average of 55 % after training, and % compliance

increased. These skills also maintained during the follow-up (Lerman et al., 2000). This

parent training behavior management procedure, like PCIT, only addressed attention as

the function of problem behavior and therefore might have found more effective results

implementing a function-based intervention.

An educative approach (increasing positives) compared to an older behavior

change approach, an eliminative approach (decreasing negatives), focuses on

functionally-equivalent skills to obtain reinforcers. This FBI should successfully apply to

children with DD (James & Scotti, 2000). PCIT is not an individualized treatment, but

rather a "packaged approach," due to the lack of focus on function of disruptive

behaviors, but minor modifications can be made to the procedure for treatment to be

client centered.

Present Study

The purpose of the present study is to examine the effectiveness of a FBI and PCIT techniques, using positive social consequences and evidence-based treatment, to improve both child and therapist behaviors, and quality of interaction. ABA has the capability of informing the PCIT community. The researcher conducted the synthesized FA and then later taught function-based strategies to the therapists.

Researchers administered an intake of indirect forms of measurement to the parent, determining how they perceive problem behaviors of their children pre-intervention: ECBI, CBCL, MAS, and QABF. The ECBI was given again post-intervention, for a comparison to the pre-intervention scores. The MAS and QABF are based on the parent interview Hanley (2012) describes. Researchers analyzed these two measures to determine the test and control conditions of the synthesized FA.

A review of the FA literature shows combinations of many single subject multi-element and reversal designs of test and control conditions, including replicating conditions. Reviewing the studies on FBIs also demonstrates single subject designs including reversal, multiple baseline across behaviors, and multiple baseline across participants. The focus of this study is to demonstrate that ABA can inform PCIT procedures for a more effective reduction of disruptive behavior. The study also examines the therapist's skills on both FBI and PCIT techniques.

Method

Experimental Design

The researcher selected a similar design to the one described by Lesack et al.

(2014), for this study. They used a simple AB design, but the current study used a non-

concurrent multiple baseline across participants design with ABCD conditions; A

(baseline), B (CDI condition), C (PDI condition), and D (PCIT+FBI condition). Each

sequential condition built upon the skills taught in the previous conditions. Previous

research has demonstrated experimental control using similar multiple-baseline design

(Johnston & Pennypacker, 2009). Following the baseline condition, the researcher

conducted a synthesized FA, similar to the procedures described by Hanley et al. (2014),

using a multi-element design with quick repeated measures of test and control conditions.

PCIT protocol followed the functional assessment.

Confidentiality and Human Subjects Research

The present study was approved by James Madison University's Institutional

Review Board. Upholding participant confidentiality was vital for the research team.

Video recording participant behaviors poses a threat due to sensitive information being

accessible to many individuals. Due to this, the researcher utilized an encrypted video

recording software and all videos were stored on an encrypted, password-protected hard

drive which was then placed in a locked filing cabinet in a locked room. The only

individuals who had access to this locked room were members of the research team.

These members accessed the hard drive for solely confidential scoring purposes. Post

data-analysis and presentation, the original data sheets and video recordings will be

destroyed.

Participants

Participants were therapist/client dyads who received supportive services from an affiliate organization of James Madison University's Institute for Innovation in Health & Human Services. Client participation was in addition to their usual service delivery. The first therapist/client dyad was a first year ABA graduate clinician and a four-year-old female. Researchers provided this participant with the pseudonym Nicole. Nicole was diagnosed with a speech-language delay and had various disruptive behaviors in the form of non-compliance, yelling, aggression, and destructive behavior. These behaviors are characteristic of a child with ODD, but she was not diagnosed as displaying ODD. The second therapist/child dyad was a different first year ABA graduate clinician and a six-year-old male. Researchers provided this participant with the pseudonym Jeremy. Jeremy was diagnosed with ASD and emitted various disruptive behaviors in the form of non-compliance, yelling, destructive behavior, and vocal stereotypy. Both therapists have knowledge, and were trained, in both PCIT and FBI techniques prior to the present study. They were also supervised by a licensed Clinical Psychologist and BCBA during the implementation of all clinical procedures.

Setting

All sessions took place in the Alvin V. Baird Attention and Learning Disabilities Center (ALDC). The researcher, coach, and observers were in one clinic room, and the therapist/child dyad in the other clinic room separated by a one-way mirror, approximately three meters away. The room was three meters by four meters, and

contained two locked file cabinets for data records, two desks for observers, a locked toy

cabinet, and a desktop computer without internet connection for recording purposes. CDI,

PDI, and FBI review took place in the conference room at the ALDC. The synthesized

FA was conducted in a clinic space identical to the previous space described. The

researcher coached the therapist using a bug-in-the-ear system from the other side of the

one-way mirror. The bug-in-the-ear communication system allowed the therapist

participant to hear the comments of the coach, who stood three to five meters away from

the therapist and child. The apparatus resembled a hearing aide in the therapist's ear. A

camera with a recording feature was used. The video-recorded sessions were downloaded

to a secure, external hard drive, locked in a file cabinet in the room.

Independent Variable(s)

A PCIT treatment protocol was the first independent variable for this study. The

therapist participated in the multiple phases of the treatment where a review of skills took

place. The coaching sessions took place during naturally occurring playful interactions

between the therapist and child. A FBI, based on the results of the synthesized FA, was

the second independent variable for this study. The therapist was taught FBI techniques

during a lecture before interacting with the child and then the primary researcher later

coached the therapists.

FBI for Attention Maintained Behaviors:

The researcher trained the therapists on a differential attention procedure. This

procedure consisted of providing attention contingently on appropriate/desired behavior

(compliance, etc.) and ignoring or turning away from the child if they engage in

inappropriate/undesired behavior (non-compliance, aggression, yelling, destructive

behavior, etc.) (Cooper et al., 1992).

FBI for Escape Maintained Behaviors:

The researcher trained the therapist on functional communication training (FCT)

having the child mand for a break from the task. For example, the child was prompted to

say, "Want help/break", by being provided an imitative verbal model (e.g. "Say want

help/break"). A two-word model will be provided, but both a one word, "want" and

"help/break", or the two-word mand was reinforced. The child then had access to the

break for 60 seconds during both the training and data collection observations (Sigafoos

& Meikle, 1996).

FBI for Access to Tangibles Maintained Behaviors:

The researcher trained the therapist on FCT to have the child mand for the desired

tangible. For example, the child will be prompted to say, "I want the _____ please", by

being provided an imitative model (e.g. "Say I want the _____"). A two-word model

will be provided, but both a one word, "want" and "the tangible", or the full mand was

reinforced. The child then had access to the tangible for 60 seconds during the training

session (Sigafoos & Meikle, 1996).

Dependent Variable(s)

There were two dependent variables in the present study, child disruptive and

target appropriate behaviors, and therapist implementation of both PCIT and FBI skills.

Both child and therapist behaviors were from the Dyadic Parent-Child Interaction Coding

System - Third Edition (DPICS 3rd Ed., Eyberg, et al., 2009) and the Revised Edition of

the School Observation Coding System (REDSOCS, Ginn, et al., 2009).

Child Behaviors

Specifically, child "Target Appropriate" Behaviors included:

1.) <u>Compliance (CO)</u>: The child initiates/ attempts to initiate task completion

within five seconds of the therapist's verbal instruction.

2.) <u>Independent/Prompted Mands (M):</u> The child spontaneously engages in a

request for a break/help/toy, or requests after therapist provides full prompt.

Specifically, child "Disruptive" Behaviors included:

3.) <u>Noncompliance (NC):</u> Child does not initiate/ attempts to initiate task

completion within five seconds of the therapist's first and/or second verbal

instruction.

4.) <u>Aggression (A):</u> Includes fighting, kicking, slapping, hitting, pushing,

shoving, grabbing an object roughly from another person, or threatening

(verbally) to do any of the preceding.

5.) <u>Yelling (Y):</u> Loud screeching, screaming, or shouting. The sound must be

loud enough so that it is clearly above the intensity of normal indoor

conversation. Yelling or loud voices are not coded as inappropriate during

outdoor activities.

6.) <u>Destructive Behavior (D):</u> a behavior during which the child damages or

destroys an object or threatens to damage an object (verbally). Do not code

destructiveness if it is appropriate within the context of the play situation (i.e.,

ramming cars in a car crash).

Therapist Behaviors

Specifically, therapist "Do Skills" included:

1.) <u>Direct command (DC):</u> A declarative statement that contains an order or

direction for a particular vocal or motor behavior to be performed. For

example, "Put the red block in the bag."

2.) <u>Reflections (R):</u> A declarative phrase or statement that has the same

meaning as a preceding child verbalization. The reflection may paraphrase

or elaborate on the child's verbalization but may not change the meaning

of the child's statement or interpret unstated ideas. For example, Child:

"I'm hungry." Therapist: "You are hungry."

3.) <u>Labeled Praise (LP):</u> A positive statement made following appropriate

client behaviors that included both praise and a specific statement

regarding the behavior being praised. For example, "Good job sitting at

the table!"

4.) <u>Unlabeled Praise (UP):</u> Any positive statement made following

appropriate client behavior. For example, "Nice job!"

5.) <u>Behavior Descriptions (BD):</u> Any statement describing the appropriate

behavior of the child. For example, "You put the blue block on the tower."

6.) <u>Positive Physical Touch (PTO):</u> Any positive physical consequence

following the appropriate behavior of the child. For example, Tickles,

high-five

7.) <u>Planned Ignoring (PI):</u> Any instance of the therapist ignoring or turning

away from child when child engages in undesired behavior.

8.) <u>Correct Prompt (CP):</u> Any instance of the therapist providing a full verbal

prompt for FCT. For example, "Say I want help/toy."

Specifically, therapist "Don't Skills" included:

9.) <u>Incorrect Timing (IT):</u> Any instance of the therapist delivering a command

and not waiting the full 5-seconds before delivering the second or not

waiting five seconds for compliance after delivering the second command.

For example, "Put the red block in the bag" (only waits three seconds)

"Put the red block in the bag."

10.) <u>Indirect Command (IC):</u> Therapist provides a suggestion for a vocal or

motor behavior to be performed that is implied or stated in question form.

For example, "Will you put the red block in the bag?"

11.) <u>Questions (Q):</u> A verbal inquiry that is distinguishable from a declarative

statement by having a rising inflection at the end and/or by having the

sentence structure of a question. For example, "Do you want to play with

the blocks?"

12.) <u>Negative Talk (NTA):</u> A negative statement of the child's behavior. For

example, "That's the wrong way to build the tower really tall."

Data Collection

All sessions were conducted in the ALDC. Each session was recorded to create a

permanent product for data analysis. Data were analyzed across all sessions and

conditions, and then summarized into graphs using a spreadsheet software (e.g.,

Microsoft Excel). Training on behavioral definitions took place before the start of

sessions. Training consisted of reviewing definitions and practice scoring sessions, using

the definitions, and scoring rules. The researcher ensured research assistants met mastery

criteria of scoring by having at least 80 % agreement on both child and therapist

behaviors before the study commenced. The research assistants had a copy of the

behavioral definitions during each scoring session. *See Appendix B for Data Collection*

Scoring Sheets.

Child and Therapist Behaviors

All child behaviors ("Target Appropriate Behaviors" and "Disruptive Behaviors")

and therapist behaviors ("Do Skills" and "Don't Skills") were scored with event

recording and calculated as a frequency per observation. The researcher examined the

data in various ways including % per opportunity; this method did not accurately

represent the live observation. For example, the child might have been noncompliant 15

instances contingent on a therapist direct command, but when calculated as a % per

opportunity, the data showed this noncompliance was emitted 15 out of the possible 60

opportunities, or 25 % of the session. Engaging in noncompliance contingent on direct

commands for 15 instances is disruptive and with a scale of 0 to 100 %, 25 % does not

accurately represent the behavior.

Researchers then examined a frequency count within a partial-interval event

recording method. This is not a true frequency count, due to the fact each interval had a

duration of 10 seconds. Partial-interval recording underestimates the occurrence of

behavior, but helps depict behaviors during the live sessions. This frequency count of

"Target Appropriate Behaviors" was calculated by summing the total of all instances of

compliance contingent on a direct command and mands during each 10 minute

observation. The frequency count of "Disruptive Behaviors" was calculated by summing

the total of all instances of aggression, noncompliance contingent on direct commands,

yelling, and destructive behavior during each 10-minute observation. The frequency

count of "Do Skills" was calculated by summing the total of all instance of direct

commands, labeled or unlabeled praises, reflections, behavior descriptions, positive

touch, planned ignoring, or correct prompts. The frequency count of "Don't Skills" was

calculated by summing the total instances of indirect commands, incorrect timing,

questions, or negative talk. These data were then graphed for visual analysis.

Synthesized Functional Analysis

The research assistants counted all child "Disruptive Behaviors" during both test

and control conditions using a frequency of problem behavior per each five-minute

condition recording method. The primary researcher then graphed these data separate

from the data collected in the baseline condition.

Inter-observer Agreement (IOA)

The research assistants scored all sessions. IOA was assessed on 40 % of the

collected data scored by the research assistants for each condition. These individuals

were highly trained observers who recorded behaviors independently yet simultaneously.

The research assistants/observers in the current study were advanced undergraduate

students enrolled in a behavior analysis independent study. IOA was calculated with an

occurrence/non-occurrence agreement method. This consisted of calculating the number

of intervals in which the observers agreed divided by the total number of intervals

multiplied by 100 (Cooper, Heron, & Heward, 2007). IOA for child and therapist

behaviors was obtained for baseline and intervention conditions across both participants.

Agreement for child and therapist behaviors was 97%.

Procedures

Baseline

The baseline condition consisted of the therapist entering the clinic space and

sitting with the child at the table. Prior to entering the room, the therapist was given the

bug-in-the-ear communication device for coaching interactions. During the baseline

condition, therapists were not coached on any PCIT or FBI techniques. The interactions

during baseline consisted of the therapist engaging with the child how a parent typically

would interact. The coach ensured the therapists engaged in an average of 15 direct

commands during this condition. Baseline data were collected on child behaviors:

compliance, non-compliance, mands, yelling, aggression, and destructive behavior (see

definitions below). Baseline data were also collected on therapist behaviors: direct

commands, indirect commands, questions, reflections, labeled/unlabeled praise, negative

talk, positive touch, incorrect timing, planned ignoring, correct prompt, and sensory

fidgets provided. The baseline condition lasted for 11 observations for Nicole, and seven

observations for Jeremy. Each observation lasted 10 minutes. During the baseline

condition, the research assistants probed the mother's behavior interacting with their

child in the clinic space; researchers wanted a test of true baseline to compare the

mother's behaviors to the therapist's behavior. This information was used to compare the

therapist's baseline to how the mother would typically interact with their child. To keep

the observations consistent, the coach assured the mothers also used 15 direct commands

during their interaction.

During all baseline observations, the researcher observed for possible functions of problem behavior using direct observation. Researchers consolidated the results of both indirect and direct forms of measurement to identify the test conditions for the synthesized FA. The researcher then administered the synthesized FA similar to that described by Hanley et al. (2012, 2014). This procedure lasted two sessions for each child participant, checking for reliability across functions. Researchers alternated between control and test conditions of both functions in combination as well as each function in isolation. Researchers provided the reinforcer contingent on problem behavior and removed it every 30 seconds. Problem behaviors were scored as a frequency per five minute condition and graphed separately.

Synthesized Functional Analysis: Jeremy

During the first synthesized FA session, the researcher started with a control condition providing Jeremy with access to preferred toys and positive attention in the form of verbal praise and touch without placing demands. This condition lasted for five minutes. The first test condition consisted of access to tangibles. The primary researcher provided the desired toy contingent on problem behavior for 30-seconds. This condition also lasted five minutes. Following this condition, a second control condition took place. This control condition was identical to the first control condition and lasted five minutes.

The second test condition consisted of escape/avoidance. The researcher placed an academic demand/instruction on Jeremy. If he complied, praise was provided, but if Jeremy emitted "Disruptive Behaviors," the primary researcher removed the demand

allowing him to avoid the demand for 30-seconds. A new academic demand/instruction

was placed every 30-seconds and avoiding the demand was contingent on problem

behavior.

Next, the third control condition took place. This condition was identical to the

first and second control conditions. The third and final test condition consisted of testing

the function of access to tangibles and escape/avoidance. The primary researcher

provided the desired tangible contingent on problem behavior for 30 seconds. In addition

to this, the primary researcher placed an academic demand/instruction every 30-seconds

and allowed Jeremy to avoid the demand contingent on problem behavior. This session

lasted a total of 30 minutes. The primary researcher then conducted a second FA session

which consisted of the same procedures described above, but the combination test

condition of access to tangibles and escape was presented after the first control condition.

This was done to check the reliability of the data from the first FA session. The procedure

went as follows: control condition, test condition (access to tangibles and escape), control

condition, test condition (escape), control condition, test condition (access to tangibles).

Synthesized Functional Analysis: Nicole

During the first synthesized FA session, the primary researcher started with a

control, providing Nicole with access to preferred toys and positive attention in the form

of verbal praise and touch. This condition lasted for five minutes. The first test condition

consisted of the combination of both tangibles and attention. These reinforcers were

provided contingent on problem behavior for 30 seconds. When tangibles were not

provided, the researcher placed them on the couch next to the table and turned away from

Nicole removing attention. Following this condition, a second control condition took

place. This control condition was identical to the first control condition and lasted five

minutes.

The second test condition consisted of one function in isolation. This happened

because researchers wanted to see if there was an increase in problem behavior testing

each function in isolation compared to the combination of both functions. This test

condition tested attention in isolation. The primary researcher turned away from Nicole

and played with another toy on the table, but Nicole could continue to play with his

preferred toy. Attention provided contingent on problem behavior and removed (turning

away) after 30 seconds. Next, the third control condition took place. This condition was

identical to the first and second control conditions.

The third test condition consisted of testing the function of access to tangibles in

isolation. The primary researcher provided the desired tangibles contingent on problem

behavior and removed them after 30 seconds. The primary researcher continued to give

Nicole verbal praise and positive touch throughout the entire duration of this final test

condition. This session lasted a total of 30 minutes. The primary researcher then

conducted a second FA session which consisted of the same procedure described above,

but the combination test condition of access to tangibles and attention was presented after

the first control condition. This was done to check the reliability of the data from the first

FA session. The procedure went as follows: control condition, test condition (attention),

control condition, test condition (tangibles), control condition, test condition (tangibles

and attention). Both FA sessions lasted 30 minutes each.

<u>PCIT Condition</u>

After a stable baseline was established with the children, and the synthesized FA had been completed, intervention began the following session. This first intervention consisted of the implementation of the CDI phase of PCIT. The researcher conducted a brief 10-minute CDI review lesson reviewing the P.R.I.D.E. skills (both "Do" and "Don't" skills). This took place at the beginning of the first intervention condition. This was only a brief 10 minute review session because the trained therapists have already mastered the PCIT techniques and therefore do not need to be taught the skills, but rather a quick overview of the behavioral definitions of the "Do" and "Don't Skills." Following the CDI review lesson, the researcher practiced using the bug-in-the-ear system with the therapist. After CDI review, the researcher coached the clinician with the client participant for five minutes, then two 10-minute observations took place. Coaching consisted of feedback on the "Do" and "Don't" skills previously described during CDI review. Coaching was conducted using a bug-in-the-ear system with the coach in one clinic room, and the therapist-child dyad in the other clinic room separated by a one-way mirror. This intervention condition lasted for six observations for Nicole, and four observations for Jeremy.

After these sessions, a continuation of the first condition followed with the introduction of the PDI phase of PCIT. This condition consisted of the same procedure described above, except the therapists were also coached on direct commands, command sequences, and following through with commands when the child engaged in non-compliance, in addition to the P.R.I.D.E skills. A brief time-out from reinforcement was

not used in the present study as the PCIT protocol recommends. For PCIT, timeout is a

procedural recommendation given without attention to behavior function, which is an

important aspect of ABA programs.

There was another brief 10 minute PDI review lesson at the beginning of the

PCIT condition. During this PDI review lesson, the therapists were reminded of

P.R.I.D.E. skills (both "Do" and "Don't" skills), placing demands on the child, and

following through with demands by implementing hand-over-hand physical prompts. For

example a therapist places a direct command, "Hand me the yellow block" (waits five

seconds and repeats the direct command). "Hand me the yellow block" (the child does

not comply after five more seconds) therapist follows through using hand-over-hand

prompting so the child hands him or her the yellow block. The researcher coached the

therapist for five minutes prior to conducting two 10 minute observations. Coaching

consisted of feedback on the "Do" and "Don't" skills previously described during PDI

review. Coaching was conducted using a bug-in-the-ear system with the coach in one

clinic room, and the therapist-child dyad in the other clinic room separated by a one-way

mirror. If the child's behavior became unmanageable, the primary researcher coached the

therapist through the interaction, ensuring the child and therapist were both safe. This

PDI intervention condition lasted 14 observations for Jeremy and six observations for

Nicole.

PCIT+FBI

After the data reached a steady state of responding during the PDI condition, the

second intervention was introduced. This intervention consisted of the therapist

implementing both PCIT procedures and the FBI together. These techniques were based

on the results of the synthesized FA the researcher conducted earlier in the study. This

constituted an individualized treatment plan for each child participant. At the beginning

of the first session during this condition, there was a brief 10-minute FBI review lesson

where the trained therapist was taught the FBI based on the child participant with whom

they interacted. The trained therapists were both currently in their first year of graduate

school in an ABA program, so they are well-informed about basic behavior analytic

principles and their implementation. After the FBI review lesson, the researcher

conducted a five-minute coaching/training observation where data were not collected on

either child or therapist behavior. During this coaching/training observation, the

therapists were directed to continue implementing skills taught during the PDI condition

in addition to training the child participant using the FBI. Training the child participant

followed procedures similar to Braithwaite and Richdale (2000).

The FBI procedures were based on the results of the synthesized FA for each

child participant. For Jeremy, the synthesized FA results showed escape as the controlling

function of his problem behaviors. During the five minute training, the therapist was

coached on modeling and instructing the replacement behavior ("Say I want help")

immediately after the presentation of the non-preferred task. The tasks during this

condition remained consistent to the tasks during baseline and PCIT.

For Nicole, the synthesized FA results showed access to tangibles as the

controlling function of his problem behaviors. During the five minute training, the

primary researcher coached the therapist on modeling and instructing the replacement

behavior ("Say I want the _____") prior to providing access to the desired toy. After

the five minute coaching/training observation, data collection continued for 10 minutes

where research assistants scored both child and therapist behaviors. Following data

collection, a second five-minute coaching/training observation took place with 10-

minutes of data collection. This same procedure continued for Jeremy for 8 observations

and continued for Nicole for 10 observations.

Results

<u>Child Behaviors</u>

Results indicated that PCIT is effective in decreasing child "Disruptive

Behaviors" and increasing "Target Appropriate Behaviors." However, adding a FBI to

the treatment package changed both "Disruptive Behaviors" to even lower levels and

"Target Appropriate Behaviors" to higher levels (Figure 1).

Jeremy

Baseline responding for Jeremy's "Disruptive Behaviors" showed slight

variability with no trend. He engaged in a mean of 5.1 problem behaviors during each

observation. Baseline responding for "Target Appropriate Behaviors" slight variability

with a decreasing trend. Jeremy's behavior with his mother for both "Disruptive

Behaviors" and "Appropriate Behaviors" were probed on one session during baseline.

His disruptive behaviors with his mother were at the same level as they were with the

therapist. Jeremy's appropriate behaviors with his mother were lower than they were with

the therapist. During baseline the topography of Jeremy's "Disruptive Behaviors" were

the means 5.25 noncompliance, 0.25 aggression, 0 yelling, and 0.125 destructive

behaviors each observation. His "Target Appropriate Behaviors" during baseline had

means of 9.75 compliance and 0 mands each observation.

Jeremy's "Disruptive Behaviors" and "Target Appropriate Behaviors" during the

CDI condition were at a low stable level. He engaged in a mean of 2.25 problem

behaviors during each observation. During CDI the topography of Jeremy's "Disruptive

Behaviors" had means of 0 noncompliance, 0 aggression, 0.75 yelling, and 1.5

destructive behaviors each observation. Jeremy's "Disruptive Behaviors" during the PDI

condition increased initially then decreased to a stable level. He engaged in a mean of

2.57 "Disruptive Behaviors" during this condition. Jeremy's "Target Appropriate

Behaviors" during PDI increased to a stable level. During PDI the topography of

Jeremy's "Disruptive Behaviors" had a means of 1.25 noncompliance, 0 aggression, 0

yelling, and 1.75 destructive behaviors each observation. His "Target Appropriate

Behaviors" during PDI had means of 14 compliance and 0.25 mands each observation.

Jeremy's "Disruptive Behaviors" during the PCIT+FBI condition maintained at

low levels with stability. The topography if his "Disruptive Behaviors" had means of 0.5

noncompliance, 0 aggression, 0 yelling, and 0.1 destructive behavior each observation.

He engaged in a mean of 0.2 "Disruptive Behaviors" during this condition. Jeremy's

"Target Appropriate Behaviors" increased to higher levels during the PCIT+FBI

condition. During PCIT+FBI the topography of Jeremy's "Target Appropriate Behaviors"

had means of 14 compliance and 10.3 mands each observation.

Nicole

Baseline responding for Nicole's "Disruptive Behaviors" showed slight variability

with an increasing trend. She engaged in a mean of 12 problem behaviors each 10-minute

observation. Baseline responding for "Appropriate Behaviors" is at a showed less

variability, with an increasing trend. Nicole's behavior with her mother for both

"Disruptive Behaviors" and "Appropriate Behaviors" were probed on one session during

baseline. Nicole's appropriate behaviors with her mom were at the same level as they

were with the therapist. During baseline, the topography of Nicole's "Disruptive

Behaviors" had means of 7.75 non-compliance, 1.42 aggression, 2.25 yelling, and 1.17

destructive behaviors. She engaged in "Target Appropriate Behaviors" a mean of 3.83

compliance and 0 mands each observation

Nicole's "Disruptive Behaviors" during the CDI condition were at a low stable

level. She engaged in a mean of 3.5 problem behaviors each observation. Her

"Appropriate Behaviors" during this condition were also at a low stable level. Nicole's

"Disruptive Behaviors" during the PDI condition increased to a stable level. She engaged

in a mean of 10.3 problem behaviors each observation. An extinction burst was observed

during the first PDI observation. Her "Disruptive Behaviors" during this first observation

were at a much higher level compared to the rest of the data points. Subsequently, her

data reached a steady state of responding. Her "Appropriate Behaviors" also increased in

level, with slight variability. During PDI, the topography of Nicole's "Disruptive

Behaviors" had means of 4.3 non-compliance, 1.67 aggression, 1.5 yelling, and 2.5

destructive behaviors. She engaged in "Target Appropriate Behaviors" a mean of 9.3

compliance and 0.17 mands each observation

Nicole's "Disruptive Behaviors" during the combined PCIT+FBI condition

decreased. She engaged in a mean of 5.2 disruptive behaviors each observation. Nicole's

"Target Appropriate Behaviors" during this condition increased to a mean of 19 each

observation. During PCIT+FBI, the topography of Nicole's "Disruptive Behaviors" had

means of 2 non-compliance, 1 aggression, 1.3 yelling, and 1 destructive behaviors. She

engaged in "Target Appropriate Behaviors" a mean of 10.8 compliance and 8 mands each

observation (Table 1).

Table 1

Average Frequency of Child Disruptive and Target Appropriate Behaviors per Observation

	Jeremy				Nicole			
	Baseline	CDI	PDI	PCIT+FBI	Baseline	CDI	PDI	PCIT+FBI
CO	9.8	.3	14.1	14	3.8	0	9.3	10.8
M	0	0	.3	10.3	0	0	.2	8
NC	5.3	0	1.3	.5	7.8	.2	4.3	2
A	0	0	0	0	1.4	2	1.2	1
Y	.3	.8	0	0	2.3	.5	1.5	1.3
DB	.1	1.5	1.8	.1	1.2	.8	2.5	1

Synthesized Functional Analysis

The results of the mother's scores on the indirect measures showed Jeremy's

controlling function of behavior is access to tangibles and to escape/avoid a demand. The

mother's scores for Nicole's function of behavior showed access to tangibles,

escape/avoid a demand, and attention. The mother's ECBI ratings are also identified

below (Table 2).

Table 2

Indirect Measure Scores

	Jeremy		Nicole	
ECBI				
	Pre-Treatment	Post-Treatment	Pre-Treatment	Post-Treatment
Intensity	80	75	76	87
Problem	75	84	47	41
MAS				
Tangibles	0.92		0.88	
Escape	0.79		0.67	
Attention	0.71		0.79	
Sensory	0.54		0.21	
QABF				
Tangibles	1.0		1.0	
Escape	0.93		0.73	
Attention	0.46		0.73	
Sensory	0.73		0.20	

The results of the synthesized FA showed the function controlling Jeremy's

disruptive behaviors was escape/avoidance of a demand, and the function of Nicole's

disruptive behaviors was access to tangibles (Figure 2). Jeremy's "Disruptive Behaviors"

had the highest frequency in a five minute observation during the escape/avoidance test

condition. Results from both the indirect measures and direct observations indicated the

functions controlling Jeremy's "Disruptive Behaviors" were primarily access to tangibles

and escape/avoidance of a demand.

Nicole's "Disruptive Behaviors" had the highest frequency in a five-minute

observation during the access to tangibles test condition. Results from both the indirect

measures and direct observations during baseline indicated the function controlling

Nicole's "Disruptive Behaviors" was primarily access to tangibles, with a small influence

for attention.

<u>Therapist Behaviors</u>

Results indicate that as therapists are trained in both PCIT techniques and a FBI,

their "Do Skills" increase and their "Don't Skills" decrease as training continues (Figure

4).

Therapist 1

Baseline responding for "Do Skills" for Therapist 1 (with Jeremy) was stable,

with no trend. Baseline responding for "Don't Skills" was stable, with no trend. Both

Mother 1's "Do Skills" and "Don't Skills" were at a higher level than the clinician's

behaviors during baseline. "Do Skills" during the CDI condition for Therapist 1 (with

Jeremy) increased and displayed an increasing trend. "Don't Skills" during the CDI

condition decreased and were stable. "Do Skills" during PDI maintained, with a slight

increasing trend. "Don't Skills" during PDI maintained at a low and stable level.

Therapist 2

Baseline responding for "Do Skills" for Therapist 2 (with Nicole) was stable, with a slight increasing trend. Baseline responding for "Don't Skills" was stable, also with a slight increasing trend. Both Mother 2's "Do Skills" and "Don't Skills" were at the same level compared to the clinician's behaviors during baseline. "Do Skills" during the CDI condition for Therapist 2 (with Nicole) increased and displayed an increasing trend. "Don't Skills" during the CDI condition decreased and were stable. "Do Skills" during PDI maintained, no trend. "Don't Skills" during PDI maintained at a low and stable level. "Do Skills" during the PCIT+FBI condition increased and were stable. "Don't Skills" during the PCIT+FBI condition maintained stability and a low level. Therapist 2 had a lower total frequency of verbalizations compared to Therapist 1. Therapist 1 had a mean of 31 verbalizations each 10-minute observation and Therapist 2 had a mean of 21.6 each observation.

Discussion

The researcher used a multiple baseline across participants 'ABCD' research design to show the effects of a FBI and PCIT on child behavior outcomes. The coach kept the frequency count of 15 direct commands consistent across baseline, PDI, and the PCIT+FBI conditions. Overall, results indicated PCIT is effective in reducing child disruptive behavior. Combining PCIT and a FBI not only decreased child "Disruptive Behaviors" to lower levels, but increased "Target Appropriate Behaviors" as well. PCIT may be effective at reducing disruptive behaviors for children with ASD and ODD-like characteristics, but when the magnitude of the problem behaviors are more extreme a function-based treatment may be more effective.

There are both strengths and limitations of the current study. There is

experimental control for each participant within themselves, as well as between

participants. When intervention began for Nicole, there was not a change in responding in

Jeremy's baseline for any conditions. There is also a clear level change between baseline,

PCIT, and the PCIT+FBI condition. Experimental control is strong when researchers

began the PCIT+FBI condition for Nicole due to the large level change from the previous

condition. There were not trends in the data from PCIT to the PCIT+FBI condition. As

researchers hypothesized, child "Disruptive Behaviors" did decrease to lower levels

during the PCIT conditions, and more social appropriate behaviors increased when

researchers added the FBI.

Prior to the PCIT condition, the primary researcher conducted a synthesized FA.

This synthesized FA procedure was based on Hanley et al. (2014). One of the indirect

measures of behavior used, the MAS, does not yield reliable scores between observers

(Zarcone, Rodgers, Iwata, Rourke, & Dorsey, 1991; Sigafoos, Kerr, & Roberts, 1994).

Indirect measures are important to learn more regarding the child's behaviors across

settings and individuals, but open-ended interviews may bring about more reliable

information to inform the researcher about test conditions for the synthesized FA. The

mother's indirect measure scores were reliable with the functions the researcher directly

observed. These scores are also consistent with the data scoring a higher frequency

during specific functions in isolation for both Jeremy and Nicole.

The results of the FAs demonstrated two clear data paths identifying the function

of problem behavior. These data paths left the researcher wondering about the true

function of problem behavior. In both FAs the combination functions for both Jeremy and

Nicole displayed one data point higher than the others on this path. For example, during

three out of the four test conditions containing escape, data were at a high frequency

compared to other conditions. During three out of the four test conditions containing

tangibles, data were at a high frequency compared to the other test conditions. Tangibles

might also have been a function of Jeremy's problem behavior (in addition to escape) and

attention might also be a function of Nicole's problem behavior (in addition to tangibles).

The individualized interventions for each child participant responded to the primary FA

conclusions. There were also interventions for the other functions. For example, Jeremy

spontaneously manded for access to tangibles (without formal training) during

observations and the desired tangible was then provided. Therapist 1 (with Nicole) also

implemented planned ignoring as a function-based intervention following PCIT protocol.

In the future, for more experimental control, researchers should provide a signal

in the environment allowing the child to be aware of what test condition is currently

taking place. It is also important for the child to be able to discriminate these signals

between conditions. For example, the researcher conducting the FA could tape different

color cards onto the wall for each condition. Researchers should also only test problem

behavior functions in isolation. Adding multiple functions into the same test condition

created more questions about function than answers. The current study did alternate the

test conditions, so each test condition was never paired with the same prior condition. In

the future, researchers should allow a five minute break prior to each control condition.

This will allow for a break from both the test and control conditions because during the

control condition the child was still getting access to reinforcement (i.e. not a true 'break'

from contingencies).

The researchers conducted two 10- minute observations each session. Both child participants showed a higher frequency of disruptive behaviors during the second observation demonstrating the importance of building rapport with the clinician. Once the environment is no longer novel, the problem behaviors increased to higher levels for both participants during baseline. Jeremy typically had more therapeutic play interactions prior to the start of observations due to clinic logistics; this could have impacted behavior due to additional rapport building. The data show a clear representation of an extinction burst for Nicole when Therapist 2 implemented follow-through guidance, but this same burst was not seen in Jeremy's data. Jeremy was a novel participant for Therapist 1, and the magnitude of his behaviors were not as extreme as Nicole's behaviors. Therapist 2 and Nicole worked together in the clinic setting prior to the start of research. In the future, having novel participants for each therapist might bring about different behaviors and results. It would also be important to replicate the current study with more therapist/child dyads. Having 3 or more dyads would show greater generalization across participants.

Researcher's predicted lower levels of disruptive behaviors during PCIT, which was evident, and also predicted even lower levels in the PCIT+FBI condition. This was predicted because the only function controlling problem behavior during the PCIT condition was attention, and attention was not the primary function for neither Nicole nor Jeremy's behaviors. From the behavior analytic perspective, when the function maintaining problem behavior is not addressed, the behavior will not decrease to lower levels. Isolating one function may be difficult because some behaviors have multiple functions, but it is vital to conduct a functional analysis before treatment of problem behavior.

The topography of both child participant's "Disruptive Behaviors" changed from one condition to another. For example, both Jeremy and Nicole engaged in more non-compliance during baseline compared to CDI. This is the case because of the opportunity to engage in this behavior. The therapists did not place demands during this condition, so the child participants did not have the opportunity for the behavior. Jeremy engaged in more destructive behaviors from baseline to CDI. The topography of the destructive behaviors changed when Jeremy did not have the opportunity to engage in non-compliance. This may be due to the nature of the CDI condition, which allowed the child to take the lead in play to build rapport. There was also an increase in yelling for Jeremy from baseline to CDI. This may also be due to the length of time Jeremy and Therapist 1 had together during this condition from the beginning of the study during baseline. The researcher observed a similar change in topography in Nicole's "Disruptive Behaviors." During baseline, Nicole engaged in more yelling compared to CDI and PDI. The researcher observed an increase in destructive behavior from baseline to PDI similarly to Jeremy. Nicole engaged in less non-compliance and yelling from baseline to PDI, which is in-line with the researcher's hypothesis.

All sessions were conducted after school hours, so the child participants may have had other setting events occurring in their environment which the researcher could not control. The toys used in each condition remained consistent as well as the therapist interacting with the child. The researcher used graduate level therapists who had mastered PCIT procedures and were able to implement them with fidelity from the outset of experimental conditions. Data were scored on therapist behavior, so the researcher could track the fidelity of treatment. Using a partial-interval recording method was

helpful for research assistants when scoring therapist behaviors because of the high rate

of verbalizations in these skilled clinicians. The "Do Skills" data path for both therapists

had an increasing trend, and the "Don't Skills" data paths maintained at a low level

throughout the entire duration on the study. This was due to the therapist training before

each condition. It was predicted that upon training the therapist would have more skills,

and therefore more opportunities, to implement these skills during interactions with the

child participants. The frequency of "Do Skills" during the PCIT+FBI condition

continued to have an increasing trend because the researcher taught the therapists more

skills on implementing FBIs (i.e. even more opportunity to engage in "Target

Appropriate Behaviors"). Research assistants then scored these behaviors in addition to

the PCIT behaviors. The therapists did not necessarily get better, but were simply

implementing better skills over time. In the future, researchers should analyze the data

after scoring the observations using both a frequency count and as a percent of intervals

containing the targeted skill. This would accurately display the skills being taught to the

therapists. In the future, it would also be vital to include both the graph displaying the

frequency count and the percent of intervals containing the skill.

The researcher probed the mother during the baseline condition for both

participants. These 4 probes showed a comparison of the mother's behavior to the

therapist's behavior during the interaction. These probes also displayed the child's

behavior with their mothers compared to the child's behavior with the therapists. Six out

of the 8 mother probes showed similar results to the therapist and child behavior.

Jeremy's "Appropriate Behaviors" with his mother were lower compared to these same

behaviors with the therapist during baseline. Mother 1 (with Jeremy)'s "Don't Skills"

were much higher than Therapist 1 during baseline. In the future, having mother/child

dyads would demonstrate a more accurate baseline of child behavior. It would also be

interesting to probe the mothers again post-intervention to see if the child's behaviors

generalized across people. The current study also had the parents complete a pre and

post-treatment ECBI. Having this information allowed the researcher to learn more about

the child in other settings and where the mother identified problem behaviors. In the

future, having novel observers watch the video recordings and complete an ECBI would

be a stronger measure of social validity because the parents were not involved in the

treatment procedures.

There were sequence effects and learning seen in the data. Conducting PCIT prior

to implementing the FBI demonstrates a sequence effect in the data. Without alternating

the PCIT and PCIT+FBI conditions, the researcher was unable to determine if the change

in both appropriate behaviors during the PCIT+FBI condition is due to the FBI or

beginning the treatment package with CDI and PDI. In the future, alternating these

treatment conditions would show a higher degree of experimental control. Both therapists

implemented a natural work-break sequence into their interactions. Due to the fact

Jeremy's controlling function is escape/avoidance, and during this natural sequence he

avoided work for several minutes, some of his behaviors were unknowingly being

controlled before the PCIT+FBI condition began using a behavior analytic principles. For

this reason, Jeremy's "Disruptive Behaviors" might have decreased to lower levels at a

faster rate/never were at high levels during any condition. This work-break sequence did

not affect Nicole's "Disruptive Behaviors" because her controlling function was

primarily access to tangibles. The data showed Nicole's behaviors at a higher frequency

for this reason. In the future, researchers should also add a tolerance delay condition after

implementing the FBI. Therapist 1 honored every request for help during the FBI

coaching and all observations. This is not a typically picture of how much attention

Jeremy receives in the environment. In the school setting, teachers and paraprofessionals

do not have the ability to honor every request such as Therapist 1 in the current study. In

the future, adding a tolerance delay condition, delaying access to help from the therapist,

would increase independence and tolerance for non-preferred tasks. The researcher also

probed both easy and difficult tasks for Jeremy during the PCIT+FBI condition to ensure

he manded for help only for difficult tasks. When Jeremy was asked to write simple

known sight words such as 'mom,' and answer basic known math facts such as

'2+1=__", he completed these tasks independently. This demonstrated Jeremy would

only mand for help for easy tasks and not to avoid every instruction placed on him during

the interaction.

 The relationship between child and therapist behavior seemed to be reciprocal.

For example, as child behavior changed the therapist behavior changed and as the

therapist behavior changed child behavior changed. During the FBI review the therapist

was coached on providing the child a correct prompt for the child to repeat to either get

access to tangibles or help with a task. When the child manded for a tangible the therapist

would provide the verbal prompt; both child and therapist engaged in either a "Target

Appropriate Behavior" or a "Do Skill." In this example, the motivating operation

(establishing operation) altered the effectiveness of getting access to the tangible, and

therefore the therapist provided the prompt for the child to repeat (child behavior changed

therapist behavior and therapist behavior changed child behavior). This circular

interaction provided more opportunities in the environment for the function of the

problem behavior to be disabled and the replacement behavior to be enabled. In the

future, researchers could conduct a multiple baseline across participants design with one

typically developing child and one child with a DD. They could then compare across

participants to see if therapist behavior changed as a result of child behavior, or if it did

not, because the typically developing child would not provide the therapist any

opportunities to engage in more "Do" Skills. Conducting a study with this nature would

allow the researcher to separate this reciprocal effect the current study demonstrated.

Nicole's "Disruptive" Behaviors have a decreasing trend from baseline to CDI.

The researcher observed the level decrease immediately during her second CDI

observation showing experimental control. During PDI, Nicole demonstrated prompt

dependent behaviors, such as holding her hand toward the therapist for hand-over-hand

guidance. Her frequency of non-compliance may be higher than it actually was in the

interaction due to the recording procedure and operational definition of non-compliance.

Another limitation of this study is the size of the one-way mirror in the clinic space. Both

child participants engaged in disruptive behaviors while they looked at their reflection in

the mirror and laughed.

Typical PCIT procedure states both the CDI and PDI conditions need to be

extended until the therapist reaches a mastery criterion for P.R.I.D.E. skills. The current

study did not extend the CDI or PDI condition for Nicole due to time restraints and

because the therapist was a skilled graduate student. Both therapists met the PCIT

protocol mastery criteria of 10 reflections, 10 labeled praises, and 10 behavior

descriptions on the first observation. The researcher extended PDI for Jeremy to reach

stability. In the current study, the length of the PDI condition was not a variable. The

researcher demonstrated control in the 6 PDI observations for Nicole and the first 6 PDI

observations for Jeremy showing a reliable effect across participants. There was not

much change in Jeremy's last 3 PDI observations compared the first 6 data points.

Extending Jeremy's PDI condition showed strong experimental control for the PCIT

condition because responding maintained throughout the condition. In the future,

researchers may extend both CDI and PDI conditions for all participants. The current

study used a variation of the PCIT procedure because of the population receiving

services. It is important to modify procedures, making treatment more individualized, and

focusing on the function maintaining problem behaviors.

Both BCBAs and Clinical Psychologists can take away important messages from

the current study. Clinicians who typically implement PCIT systematically, can take the

current findings as a possible helpful addition to the treatment package. The PCIT

literature is expanding to not only typically developing children and children with

Attention Deficit Hyperactivity Disorder, but DDs as well. As the previous literature

states, children with DDs engage in problematic behavior to the extent of a behavioral

intervention needed. Adding a functional component and teaching children socially

appropriate replacement behaviors, gaining access to the same function as the problem

behaviors, is vital for successful outcomes in the environment. Implementing contingent

consequences and enabling replacement behaviors will bring about more socially

appropriate behaviors.

BCBAs can also benefit from implementing a combination treatment package with both a functional component and a parent-training model. The attention function is very common as a maintaining variable for children with problem behavior. PCIT does address this attention function in the manual. PDI was effective at reducing problematic behavior for children with less severe behaviors. These results are wonderful news for the behavior analytic world because setting up the environment with appropriate praise contingencies and simply building rapport with clients can alter behavior for the better over time. Parent-training is vital for generalization and insurance companies are now mandating parent training hours. In conclusion, merging evidence-based treatments creating an individualized treatment package brings about socially significant behavior change for the child and better outcomes for caregivers.
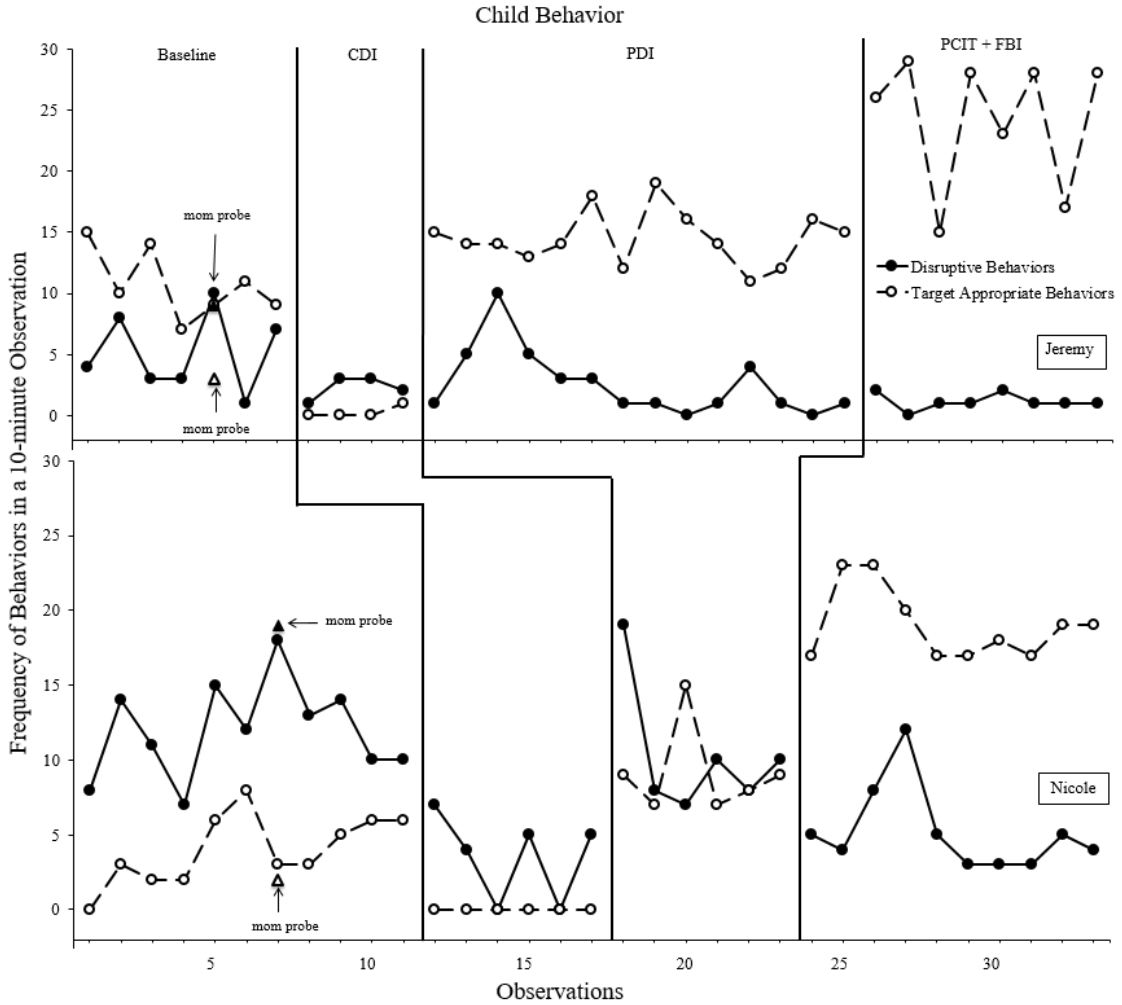
Figure 1. Child Behavior of "Disruptive Behaviors" and "Target Appropriate
Behaviors" each 10-minute observation. Baseline contains a probe of the child
participant's behavior with their mother identified by arrows.
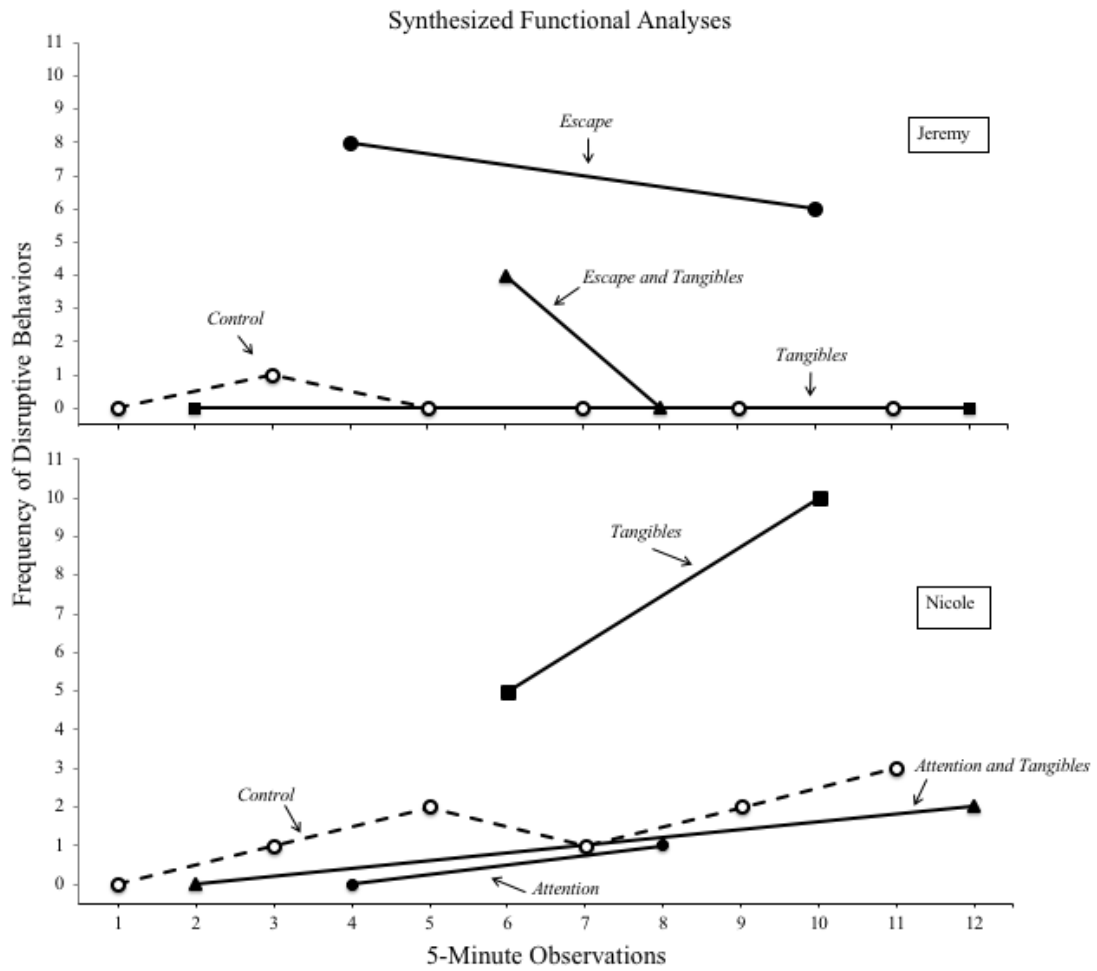
Figure 2. Interview-informed synthesized functional analysis for two child participants. An alternation between test and control conditions conducted are identified above in italics.
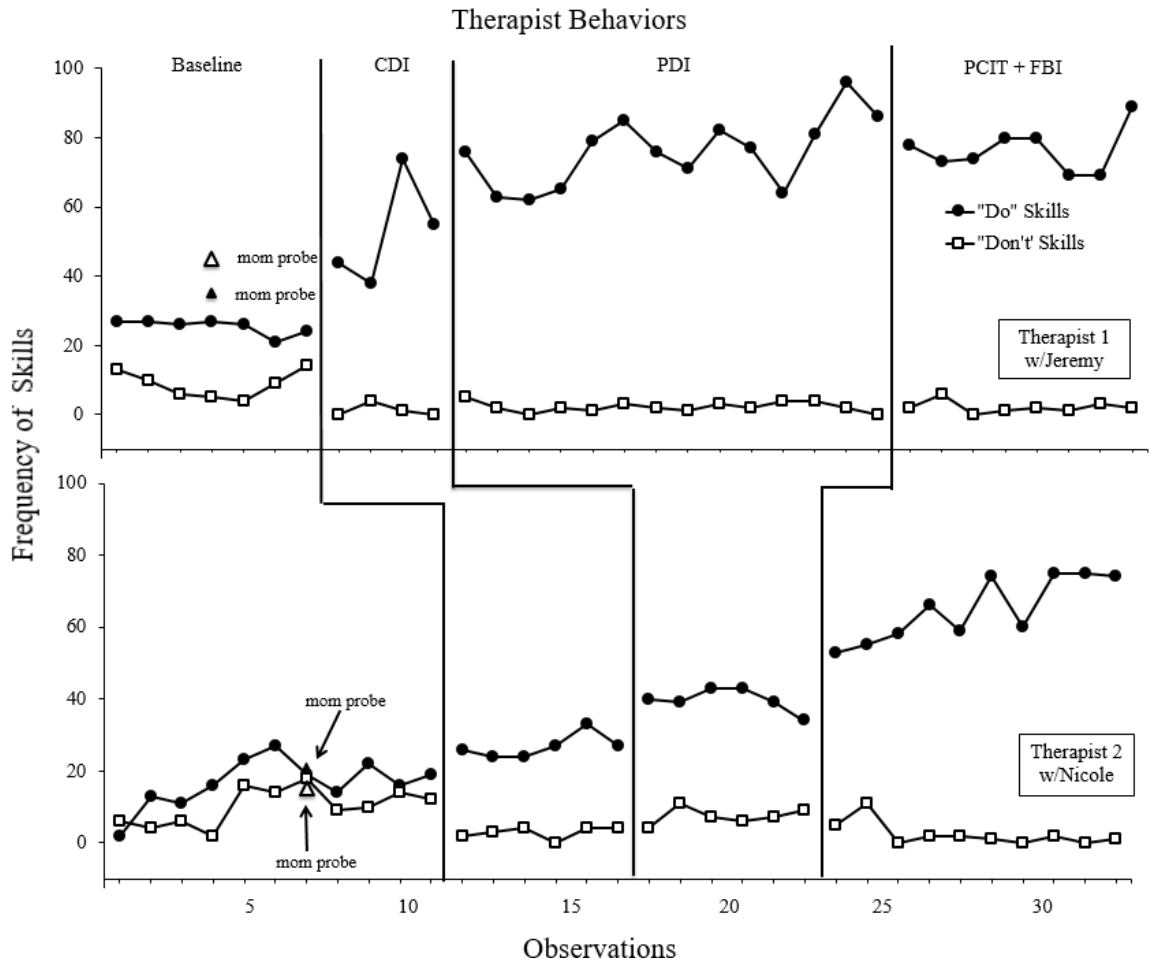
Figure 3. Therapist Behavior of "Do" and "Don't" Skills each 10-minute observation. Baseline contains a probe of the mother's "Do" and "Don't" Skills identified by arrows.

Appendix A.

Motivation Assessment Scale

1986 V. Mark Durand, Ph.D.

Name _____   Rater _____

Date _____

Behavior Description

_____

_____

Setting Description

_____

Instructions: The Motivation Assessment Scale is a questionnaire designed to identify those
situations in which an individual is likely to behavior in certain ways. From this information,
more informed decisions can be made concerning the selection of appropriate reinforcers and
treatments. To complete the MAS, select one behavior that is of particular interest. It is
important that you identify the behavior very specifically. "Aggressive", for example, is not
as good a description as "hits his sister". Once you have specified the behavior to be rated,
read each question carefully and circle the one number that best describes your observations
of this behavior.

0=Never, 1=Almost Never, 2=Seldom, 3=Half the Time, 4=Usually,

5=Almost Always, 6=Always

Durand V. M, Crimmins D. B. (1986). The Motivation Assessment Scale: An administration manual. Unpublished manuscript,

University at Albany, State University of New York, Albany, NY.

Questions	Answers
1. Would the behavior occur continuously, over and over, if this person were left alone for long periods of time? (For example, several hours)	0 1 2 3 4 5 6
2. Does the behavior occur following a request to perform a difficult task?	0 1 2 3 4 5 6
3. Does the behavior seem to occur in response to you talking to other persons in the room?	0 1 2 3 4 5 6
4. Does the behavior ever occur to get a toy, food, or activity that this person has been told that he or she can't have?	0 1 2 3 4 5 6
5. Would the behavior occur repeatedly, in the same way, for very long periods of time, if no one were around? (For example, rocking back and forth for over an hour.)	0 1 2 3 4 5 6
6. Does the behavior occur when any request is made of this person?	0 1 2 3 4 5 6
7. Does the behavior occur whenever you stop attending to this person?	0 1 2 3 4 5 6
8. Does the behavior occur when you take away a favorite toy, food, or activity?	0 1 2 3 4 5 6
9. Does it appear to you that this person enjoys performing the behavior? (It feels, tastes, looks, smells, and/or sounds pleasing.)	0 1 2 3 4 5 6
10. Does this person seem to do the behavior to upset or annoy you when you are trying to get him or her to do what you ask?	0 1 2 3 4 5 6
11. Does this person seem to do the behavior to upset or annoy you when you are not paying attention to him or her? (For example, if you are sitting in a separate room, interacting with another person.)	0 1 2 3 4 5 6
12. Does the behavior stop occurring shortly after you give this person the toy, food, or activity he or she has requested?	0 1 2 3 4 5 6
13. When the behavior is occurring, does this person seem calm and unaware of anything else going on around him or her?	0 1 2 3 4 5 6
14. Does the behavior stop occurring shortly after (one to five minutes) you stop working or making demands of this person?	0 1 2 3 4 5 6
15. Does this person seem to do the behavior to get you to spend some time with him or her?	0 1 2 3 4 5 6
16. Does the behavior seem to occur when this person has been told that he or she can't do something he or she had wanted to do?	0 1 2 3 4 5 6

	Sensory	Escape	Attention	Tangible
	1. ____	2. ____	3. ____	4. ____
	5. ____	6. ____	7. ____	8. ____
	9. ____	10. ____	11. ____	12. ____
	13. ____	14. ____	15. ____	16. ____
Total Score =	____	____	____	____
Mean Score = (divide the total score by 4)	____	____	____	____
Relative Ranking (high score to low score)	____	____	____	____

If there is a tie for the highest score or if the means of the top two categories are within **.25 to .50** points (and you have clearly specified the behaviour and setting), then both are considered as influences that may be causing the problem behaviour to continue.

Student's Name_____   Date: _____

Behavior: _____   Respondent: _____

QUESTIONS ABOUT BEHAVIORAL FUNCTION (QABF)

Rate how often the student demonstrates the behaviors in situations where they might occur. Be sure to rate how often each behavior occurs, not what you think a good answer would be.

X = Doesn't apply   0 = Never   1 = Rarely   2 – Some   3 = Often

Score	Number	Behavior
	1.	Engages in the behavior to get attention.
	2.	Engages in the behavior to escape work or learning situations.
	3.	Engages in the behavior as a form of "self-stimulation".
	4.	Engages in the behavior because he/she is in pain.
	5.	Engages in the behavior to get access to items such as preferred toys, food, or beverages.
	6.	Engages in the behavior because he/she likes to be reprimanded.
	7.	Engages in the behavior when asked to do something (get dressed, brush teeth, work, etc.
	8.	Engages in the behavior even if he/she thinks no one is in the room.
	9.	Engages in the behavior more frequently when he/she is ill.
	10.	Engages in the behavior when you take something away from him/her.
	11.	Engages in the behavior to draw attention to himself/herself.
	12.	Engages in the behavior when he/she does not want to do something.
	13.	Engages in the behavior because there is nothing else to do.
	14.	Engages in the behavior when there is something bothering him/her physically.
	15.	Engages in the behavior when you have something that he/she wants.
	16.	Engages in the behavior to try to get a reaction from you.
	17.	Engages in the behavior to try to get people to leave him/her alone.
	18.	Engages in the behavior in a highly repetitive manner, ignoring his/her surroundings.
	19.	Engages in the behavior because he/she is physically uncomfortable.
	20.	Engages in the behavior when a peer has something that he/she wants.
	21.	Does he/she seem to be saying, "come see me" or "look at me" when engaging in the behavior?
	22.	Does he/she seem to be saying, "leave me alone" or "stop asking me to do this" when engaging in the behavior?
	23.	Does he/she seem to enjoy the behavior, even if no one is around?
	24.	Does the behavior seem to indicate to you that he/she is not feeling well?
	25.	Does he/she seem to be saying, "give me that (toy, food, item)" when engaging in the behavior?

Attention	Escape	Non-social	Physical	Tangible
1. Attention	2. Escape	3. Self-stim	4. In pain	5. Access to items
6. Reprimand	7. Do something	8. Thinks alone	9. When ill	10. Takes away
11. Draws	12. Not do	13. Nothing to do	14. Physical problem	15. You have
16. Reaction	17. Alone	18. Repetitive	19. Uncomfortable	20. Peer has
21. "Come see"	22. "Leave alone"	23. Enjoy by self	24. Not feeling well	25. "Give me that"
Total	Total	Total	Total	Total

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Appendix B.

Interval Coding Sheet for Child Behaviors

Date:_____   Circle One: Live 1   Live 2
Research Participant ID:_____
Observer ID:_____   Primary   Secondary

Minute 1

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

Behavior Total 1						

Minute 5

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

	CO	NC	A	Y	DB	M
1						
2						
3						
4						
5						
6						

Behavior Total (1)						
Behavior Total (2)						
Total (1+2)						

Interval Coding Sheet for Therapist Behaviors

Date:_____   Circle One: Live 1   Live 2

Research Participant ID:_____

Observer ID:_____   Primary   Secondary

Minute 1

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

Total												

Minute 5

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

	DC	IT	IC	R	LP	UP	BD	PTO	Q	NTA	PI	CP
1												
2												
3												
4												
5												
6												

Bx Total 1												
Bx Total 2												
1+2												
Bx % (#/30)												
IOA												
	―30	―30	―30	―30	―30	―30	―30	―30	―30	―30	―30	―30

Synthesized FA Data Sheet

Date:_ ____
Client ID:_ _____
Observer ID:_____

Circle One: Primary   Secondary

Control	Problem Behaviors (frequency)
0:00-5:00	

Test (Tangibles & Attention)	Problem Behaviors (frequency)
5:00-10:00	

Control	Problem Behaviors (frequency)
10:00-15:00	

Test (Escape)	Problem Behaviors (frequency)
15:00-20:00	

Control	Problem Behaviors (frequency)
20:00-25:00	

Test (Tangibles)	Problem Behaviors (frequency)
25:00-30:00	

Noncompliance (NC): Child does not initiate/ attempts to initiate task completion within 5 seconds of the therapist's first and/or second verbal instruction.

Aggression (A): Includes fighting, kicking, slapping, hitting, pushing, shoving, grabbing an object roughly from another person, or threatening (verbally) to do any of the preceding.

Yelling (Y): Loud screeching, screaming, or shouting. The sound must be loud enough so that it is clearly above the intensity of normal indoor conversation. Yelling or loud voices are not coded as inappropriate during outdoor activities.

Destructive Behavior (D): a behavior during which the child damages or destroys an object or threatens to damage an object (verbally). Do not code destructiveness if it is appropriate within the context of the play situation (i.e., ramming cars in a car crash).

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