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Targeting Parental Behavior: Contingency Contracting to Increase Parental Competence and Adherence

Sara Clasky Richardson

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Targeting Parental Behavior: Contingency Contracting to
Increase Parental Competence and Adherence

by
Sara Clasky Richardson

An Applied Dissertation Submitted to the
Abraham S. Fischler College of Education
and School of Criminal Justice in Partial
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Approval Page

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Statement of Original Work

I declare the following:

I have read the Code of Student Conduct and Academic Responsibility as described in the *Student Handbook* of Nova Southeastern University. This applied dissertation represents my original work, except where I have acknowledged the ideas, words, or material of other authors.

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Sara Clasky Richardson

Name

May 5, 2023

Date

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Abstract

Targeting Parental Behavior: Contingency Contracting to Increase Parental Competence and Adherence. Sara Clasky Richardson, 2023: Applied Dissertation, Nova Southeastern University, Abraham S. Fischler College of Education and School of Criminal Justice. Keywords: child behavior, behavior disorders, problem behavior, applied behavior analysis, noncompliance

The purpose of this study was to investigate the impact of using behavior contracts specifically targeting parental behavior and providing reinforcing consequences for the parent's behavior on parental adherence in implementing behavior contracts to address their child's behavior problems. Parents used identical procedures to implement behavior contracts with their children to address their child's noncompliance and associated problem behavior. A secondary purpose of this study was to determine parent perceptions about the impact their use of behavior contracts had on the behavior of their children.

This study used a multiple baseline across participants design to measure the effectiveness of a behavior contract intervention on parental adherence. The multiple-baseline across-participants design enabled the investigator to examine the effects of using behavior contracts on parents' behavior in implementing a similar intervention with their own child. The participants in this study were three parents referred to a behavior analysis agency owned by this researcher to obtain services for a child engaging in problem behaviors associated with noncompliance.

Overall, all of the participants maintained scores during the maintenance probe that were dramatically higher than those observed during the baseline phase. This means that, between 1 and 2 weeks after the intervention, all participants' scores remained higher than they did before the intervention. All three participants received very similar scores on the maintenance probe to those observed during their last intervention session. Of the three participants, one participant's score (Participant 1) decreased slightly from the last intervention session, one improved slightly (Participant 2), and one remained the same (Participant 3). This finding suggests short-term maintenance of behavioral gains.

In order to have parents maintain their adherence to the current intervention, participants identified reinforcers that they gave themselves on a daily basis when goals were met. This proved to be less successful than predicted. Without good procedures to maintain behavioral gains, these improvements may regress over time, negating the usefulness of an effective intervention. Future research might also look at the extent to which social reinforcers could help maintain behavioral gains. Because the present study did not correlate parent progress with outcome data for their child and did not monitor the behavior of the participants' children, future studies could correlate the results of parent contracts with their child's outcome data.

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Chapter 1: Introduction

Statement of the Problem

Managing the behavior of children is a primary challenge for parents. Available techniques are limited in their ability to make a significant impact in applied settings. Contingency contracts are powerful tools parents can use to encourage positive behavior in their children (Eyberg & Johnson, 1974; Hawkins et al., 2011; Mruzek et al., 2007). They utilize principles of reinforcement to reduce problem behaviors of children by targeting positive alternative behaviors to reinforce (Miller & Kelley, 1994; Otto et al., 2003). Despite the potential to facilitate important changes in the behavior of children, the impact of this technology is often sabotaged due to a lack of focus on the behavior of parents (Patterson & Chamberlain, 1988, 1994). Although parents state a desire to change their child's behavior, and practitioners put time and effort into training parents to implement behavior plans, program procedures are often not implemented as prescribed (Patterson & Chamberlain, 1988). The result is that the child misses out on receiving a potentially beneficial treatment and both parents and practitioners have wasted their time.

The Research Problem

Behavior analysis interventions are not always effective in applied settings (DeGarmo et al., 2004; Patterson, 1976). Behavioral procedures are not implemented as prescribed and sometimes not implemented at all (DeGarmo et al., 2004). Gains made in a clinic do not generalize to the home setting or do not maintain when a therapist is no longer overseeing the program (Kazdin & Wassell, 2000; Lane et al., 2016; Lovaas et al., 1973). A caregiver may learn to implement procedural steps but fail to do so consistently (MacNaughton & Rodrigue, 2001). This lack of fidelity negatively impacts the success of the program, and the child's behavior does not improve.

When behavior intervention plans are written to treat problem behaviors exhibited by children, the maladaptive behaviors of the child are targeted (Allen & Warzak, 2000). Caregivers are provided with a prescribed plan to increase and maintain adaptive behaviors meant to replace problem behaviors (Allen & Warzak, 2000). Based on the principles of applied behavior analysis, reinforcement is essential for increasing desired behavior (Fischetti et al., 2012). It follows that this principle applies not just to the behavior of children, but also to the parental behavior necessary to carry out interventions to change child behavior. However, very few studies identify specific and necessary caregiver behaviors. The caregivers' behavior is not directly targeted, and reinforcers are not identified to increase and maintain caregiver behavior. It is unreasonable to assume that caregivers will carry out intervention programs and maintain fidelity to the implementation of procedures in the absence of reinforcement as their behaviors are affected by the same contingencies that impact child behaviors. The present study sought to address the problem of parental nonadherence in utilizing behavior contracts to reduce problem behaviors of children. The hypothesis is that specifically targeting the parents' behavior and providing reinforcers to maintain parental behavior will increase parental adherence.

Background and Justification

Some studies provide parent training to teach parents to implement behavioral interventions to reduce child behavior problems (Artman-Meeker et al., 2015; DeGarmo et al., 2004; Ingersoll & Dvortcsak, 2006; Lane et al., 2016; Lovaas et al., 1973; Sibley et al., 2013, 2014). These studies focus on child behavior problems but lack a focus on the behavior of parents. An analysis of the merits of targeting parental behavior and providing reinforcers is justified to determine if this technique would create interventions

that are more successful in applied settings.

Deficiencies in the Evidence

Although, as previously mentioned, there are many studies using behavior contracts to reduce child behavior problems, very few target the behaviors of parents (Dodge et al., 2007; Enea & Dafinoiu, 2009; Evans et al., 2005, 2007; Eyberg & Johnson, 1974; Forehand et al., 1979; Hawkins et al., 2011; Kaiser & Roberts, 2013; Langberg et al., 2010; Miller & Kelley, 1994; Mruzek et al., 2007; Otto et al., 2003; Sibley et al., 2013, 2014). Within these studies, there is a paucity of research directly addressing the behavior of caregivers in changing children's behavior. A study reviewed targeted the behavior of mothers (Forehand et al., 1979). This study was unique in its focus on the behavior of parents. Prompts were used to facilitate the parent's use of positive reinforcement for child behavior as well as to decrease negative statements. However, reinforcers contingent on the parent's behavior were not provided.

There is a lack of research on the fidelity of parent training procedures (Barton & Fettig, 2013). One study reported limited success in encouraging parents to attend all the parent training sessions. As a result, the parents' training was not complete (Ingersoll & Dvortcsak, 2006). Studies that include parent training do not report implementation fidelity (Eyberg & Johnson, 1974; Hawkins et al., 2011; Mruzek et al., 2007), so it is not possible to know if procedures were followed as prescribed. This finding is reflected in the study by Forehand et al. (1979). As data were collected in the clinic only, it was not possible to assess if parental behavior prompted in the clinic maintained at home (Forehand et al., 1979).

When data were collected on fidelity of parent implementation, the information was not continuous. For example, Lane et al. (2016) collected baseline data during only

one session, and, as a result, the data had limited value. Often, data on the relationship between parent training and parent implementation of interventions were not collected at all (Langberg et al., 2010; Lyon & Budd, 2010). Studies did not report interobserver agreement (IOA) of parental implementation of procedures (Evans et al., 2005; Langberg et al., 2010; Mruzek et al., 2007).

Studies that incorporated behavior contracts at home to complement the behavior contracts used for student behavior in a school setting did not include procedures for prompting or maintaining the parent behavior necessary for implementation (Evans et al., 2005; Langberg et al., 2010; Mruzek et al., 2007). For example, one study utilized a parent-initiated behavior contract for two boys, one with a diagnosis of autism and the other with an attention deficit hyperactivity disorder (ADHD) diagnosis, to reduce problem behaviors at school (Mruzek et al., 2007). Although it was inferred that the contract used at home contributed to the progress made at school, no monitoring of program implementation was conducted to ensure fidelity. Data collected at home were anecdotal in nature and highly subjective.

Available research provides limited information on the factors that influence the behavior of parents (Patterson, 1976; Stocco & Thompson, 2015). There is a lack of studies that functionally assess the behavior of parents. Some studies used functional assessment of the children's problem behaviors prior to designing an intervention (Hawkins et al., 2011). However, parent behavior was not functionally assessed when a contract was implemented in the home setting (Hawkins et al., 2011; Mruzek et al., 2007). Identifying factors that motivate parental adherence could result in greater success of interventions. The best intervention is useless if not implemented correctly. This missing component in the existing body of research could be important for informing

applications for child behavior problems.

There is controversy over the value of parent training conducted in a clinic by therapists versus in a home setting. Some research suggests that therapist-implemented interventions are more successful than parent-implemented treatments (Roberts et al., 2011; Villodas et al., 2014). Research has not directly assessed the generalization of parent behaviors outside of a clinic setting (Lane et al., 2016). Research has not assessed if parents continue to implement procedures or if procedures are implemented as prescribed when a trainer is not present (Lane et al., 2016). Additionally, there is a lack of data on the success of fading supports. Data, therefore, do not reveal the sustainability of parent-implemented interventions in home and community settings. The question of who will continue to implement procedures so that problem behaviors do not return, and alternative behaviors resume is not answered with these studies (Roberts et al., 2011; Villodas et al., 2014).

Although some studies demonstrate that coaching can be effective in training parents, they fail to demonstrate that the skills learned are maintained outside of sessions with a trained therapist (Lane et al., 2016). Data are not collected to determine if skills learned in a clinic generalize to the home setting (Forehand et al., 1979; Ingersoll & Dvortcsak, 2006; Jones et al., 1977; Kazdin et al., 1997; Lane et al., 2016). Studies incorporating a maintenance session did so with the parent coach present, which was not a true measure of maintenance (Lane et al., 2016). As a result, the value of this type of intervention cannot be determined as skills learned in parent training are of little value if they do not generalize outside of the clinic and if they are not maintained. Finally, there is a lack of research on parent training for parents of children with no diagnosis (Lane et al., 2016). Most studies focus on children with disabilities (Cardon, 2012; Chaabane et al.,

2009; Kaiser & Roberts, 2013; Lafasakis & Sturmey, 2007; Lane et al., 2016).

Audience

This study applies to behavior analysts developing intervention programs to address children's behavior and working with their parents. This study would also be useful to parents who seek help improving the behavior of their children. Also, part of the target audience includes therapists, school personnel, and agencies providing services to individuals with problem behavior. Insurance companies that cover behavior analysis services may also find this research interesting, as improving parent training practices can ultimately reduce the length of services and help with the maintenance of behavioral gains.

Setting of the Study

The present study took place in the subjects' homes since that is where the interventions occur within the researcher's practice. One home comprised of a two-parent family, a second home comprised of a single mother, and a third child resided with his grandmother. The intervention in each case took place in a room relatively free of distractions. People present in the room included the subject (i.e., a parent of the child), their child for whom the subject wrote a behavior contract, and an experimenter. All three families reside within Miami-Dade County. At the researcher's practice, the population of clients served is reimbursed approximately 75% by Medicaid, 10% by Children's Medical Services, 5% by other insurance, and 10% by foster care agencies.

Researcher's Role

As the owner of a small behavior analysis agency, the investigator receives referrals requesting services to address the problem behaviors of children. To this end, behavior contracts are commonly utilized to address child behavior problems. Parents are

trained to implement behavior contracts. The investigator in the current study was able to design an intervention that targeted the behavior of the parents and facilitated the delivery of positive reinforcers contingent on targeted parental behavior.

Purpose of the Study

The purpose of this study was to investigate the impact of using behavior contracts specifically targeting parental behavior and providing reinforcing consequences for the parent's behavior on parental adherence in implementing behavior contracts to address their child's behavior problems. Parents used identical procedures to implement behavior contracts with their children to address their child's noncompliance and associated problem behavior. A secondary purpose of this study was to determine parent perceptions about the impact their use of behavior contracts had on the behavior of their children.

Definition of Terms

For the purpose of this applied dissertation, the following terms are defined.

Applied Behavior Analysis

This term refers to principles that are derived from the science of behavior analysis applied to modify behavior in natural settings (Cooper et al., 2020).

Contingency Contract

This term refers to a document that specifies reinforcers delivered contingent upon specific behavior exhibited. A behavior chart is used to track the behaviors exhibited that are required to earn specific rewards and the rewards earned (Cooper et al., 2020).

Discriminative Stimulus

This term refers to a stimulus that signals that a behavior will be reinforced due to

a history of reinforcement of the behavior in its presence (Cooper et al., 2020).

Parental Adherence

This term refers to the consistency with which parents implement procedures as prescribed (Allen & Warzak, 2000).

Positive Reinforcement

This term refers to a consequence that involves adding a stimulus resulting in an increase in the behavior it follows (Skinner, 1966).

Chapter 2: Literature Review

This review summarizes the literature on behavior contracts, especially regarding child noncompliance: the behaviors children engage in to escape following their parents' directives. Chapter 2 will begin by briefly describing behavior contracts. It will then move to a discussion of child noncompliance, a common problem targeted by this intervention. The causes and common interventions used to address behaviors children engage in to avoid compliance will be discussed. The bulk of the review will be an indepth look at behavior contracts as a mechanism for improving children's behavior of following directives. As behavior contracts are often implemented using a combination of approaches, this review will discuss some of the components individually. In addition, it will review the use of behavior contracts targeting noncompliance in both schools and homes. Finally, this chapter will review the literature on behavior contracts that target parental behavior to reduce child noncompliance as well as parent training techniques.

Behavior Contracts

Behavior contracts, sometimes called contingency contracts, are documents that target specific expectations for behavior, and identify specific reinforcers for meeting expectations (Stover et al., 2008). Contracts often include signatures of commitment of at least two people, usually the child whose behavior is being addressed and the parent, therapist, or other caregivers (Cooper et al., 2020). Behavior contracts are useful tools to improve children's behavior problems and are applied to increase desired behavior and decrease undesired behavior, making them an effective way of dealing with child noncompliance (Artman-Meeker et al., 2015; Cancio et al., 2004; Edgemon et al., 2020).

Behavior contracts have been used to address a variety of behaviors, from physical problems such as nocturnal enuresis (Stover et al., 2008) and asthma (Hillman &

Miller, 2009) to habit formation for healthy behavior (Gurrad et al., 2002; McKenna, 2020; Robinson & Sheridan, 2000). Behavior contracts have been used to reduce overeating and increase consumption of healthy foods in a child with autism spectrum disorder (Chagolla, 2020), to reduce problem behaviors of children residing in residential juvenile justice programs (Jolivette et al., 2018), to increase social skills (Alwahbi & Hua, 2020), as part of marriage counseling (Knox, 1973), for noncompliance with glucose monitoring of adolescents with diabetes, and to reduce the behavior of nagging by their parents (Carroll et al., 2011). This review will focus on the use of behavior contracts for addressing child noncompliance.

Child Noncompliance

Child noncompliance is a broad term defined as a child doing anything other than what an adult instructs them to do (Kalb & Loeber, 2003). Noncompliance is not one behavior but any behavior that results in not complying. Children engage in noncompliance when they refuse to engage in a directive or actively do things other than what an authority figure directs them to do, often accompanied by disruptive behaviors. Child noncompliance is a common target behavior for intervention and is the most common reason to refer a child for mental health services (Robson & Kuczynski, 2018). However, there is an extensive range of children's noncompliance, beginning with the expected and adaptive noncompliance of toddlers, when the word *no* becomes an essential tool for learning to control their environments (Kuczynski & Kochanska, 1990).

However, noncompliance becomes worthy of intervention when exhibited at a high frequency or involves a range of problem behaviors (Hillman & Miller, 2009). When clinically significant, noncompliance can sabotage a child's health, development, and learning. If a child refuses to brush their teeth once at 7:00 p.m., this may be a small

problem, but if the child refuses to ever brush their teeth, or to take their insulin, these problems can become serious and life changing. Noncompliance has also been associated with adverse health outcomes for children with Type 1 diabetes (Feldman et al., 2018) and with likely psychiatric diagnoses (Kalb & Loeber, 2003). In addition, persistent noncompliance is positively correlated with unsatisfactory academic progress (Lind et al., 2020) interfering with children's learning (Bosch & Fuqua, 2001; Kern et al., 2002). When noncompliance is severe, it can significantly impede development in academics and social skills, which are essential for child development (Bosch & Fuqua, 2001; Forehand et al., 1979; Kern et al., 2002). Noncompliance also becomes problematic when it is accompanied by other interfering behavior, some of which can be serious (Forehand et al., 2011; Kern et al., 2002), including physical aggression, severe tantrums, and property destruction. These interfering behaviors occur frequently enough to have become part of the topography of noncompliance (Bosch & Fuqua, 2001; Kazdin et al., 1997; Kazdin & Wassell, 2000).

Researchers have reached varying conclusions as to the etiology of childhood noncompliance. Some posit that genetics play a role (Villafuerte et al., 2014), while others cite environmental influences (Patterson, 1976). Some postulate that parent behaviors can either cause, or at least exacerbate, child noncompliance (Khan & Bano, 2016), noting that children who are victims of maltreatment demonstrate higher incidents of significant noncompliance (Lind et al., 2020). They focus on parental behaviors that influence or shape children's compliant behavior (Bernhardt & Forehand, 1975; Leijten et al., 2016), noting that when children's compliance does not produce reinforcers from parents, good behavior will be extinguished (Kuczynski & Kochanska, 1990).

When noncompliance becomes severe enough to cause impairment in a child's

life, parents seek clinical intervention for their children. The literature shows that many different interventions have been used to address noncompliance and the disruptive behaviors that go with it (Bearss et al., 2018; DeGarmo et al., 2004; Khan & Bano, 2016; Leijten et al., 2016; Lind et al., 2020). Some interventions are proactive, manipulating variables antecedent to the behavior (Fischetti et al., 2012; Forehand et al., 1979, 2011; Lind et al., 2020), while some are reactive, implementing consequences for noncompliance.

When parents of young children engaging in frequent noncompliance seek help from pediatricians, they are often told that the child will grow out of it (Shaw & Gilliom, 2000) although early problem behaviors, including marked noncompliance, may predict later functioning (Kern et al., 2002). Unfortunately, clinically significant maladjustment is unlikely to be detected before school age (Shaw & Gilliom, 2000). However, as children get older, problems become increasingly resistant to treatment (Kern et al., 2002; Shaw & Gilliom, 2000), indicating that early intervention is essential and that waiting for a child to outgrow the behavior may lead to more significant problems. Taken together, clearly it is critically important to identify effective strategies to lessen the problem of child noncompliance.

A good deal of research has focused on how child noncompliance responds to different types of consequence variables, including positive reinforcement (Everett et al., 2005; Schieltz et al., 2019), negative reinforcement (DeGarmo et al., 2004; Patterson & Chamberlain, 1988), as well as both positive and negative punishment (Dadds & Tully, 2019; Jolivet et al., 2018). Positive reinforcement is often utilized in the form of contingent praise for compliance with directives (Dowdy et al., 2018; Everett et al., 2005), although studies disagree about whether praise should be specific or nonspecific

(Forehand et al., 1979, 2011; Leijten et al., 2016). Leijten et al. (2016) compared the use of specific praise by parents to nonspecific praise with a control phase of no praise. Contrary to general belief, results reported by Leijten et al. found that nonspecific praise was more effective than specific praise. Not surprisingly, both types of praise were more likely to shape compliance than no praise (Leijten et al., 2016). In addition to praise, positive reinforcement can be provided in the form of edible reinforcers. Dowdy et al. (2018) provided edible reinforcers contingent on compliance with nail cutting. They found a significant reduction in noncompliance for both subjects: two children diagnosed with autism spectrum disorder.

Research has examined situations in which noncompliance is reinforced unintentionally, both positively and negatively. For example, in juvenile justice facilities, noncompliance is sometimes positively reinforced by attention from both peers and staff (Jolivette et al., 2018). Peers may reinforce the child engaging in noncompliance and disruptive behaviors by showing approval (Myslinska Szarek et al., 2020; Patterson et al., 1989) and modeling the disruptive behavior (Myslinska Szarek et al., 2020). Sometimes noncompliance is reinforced in the form of access to desired items or activities (Schieltz et al., 2019; Tsami & Lerman, 2020).

Noncompliance may also receive unintentional negative reinforcement (Patterson & Chamberlain, 1988). Patterson and Chamberlain (1988) described a negative feedback loop during which the parent and child negatively reinforce each other's maladaptive behavior. When children are in school, noncompliance can be negatively reinforced with the ability to escape, or at least postpone, completing schoolwork or homework (Cancio et al., 2004; Hawkins et al., 2011). Thus, unintentional positive and negative reinforcement can strengthen problem behaviors such as noncompliance, although some

strategies can mitigate the situation (Schieltz et al., 2019; Shaw & Giliiom, 2000). When noncompliance has been negatively reinforced by escape, researchers found they could effectively counteract this effect by providing a positive reinforcer for compliance (Allen & Polaha, 2003; Schieltz et al., 2017).

Punishment techniques, including time out from reinforcement and verbal reprimands, can also reduce noncompliance and other severe and long-standing problem behaviors (Bostow & Bailey, 1969; Velasquez et al., 2016). Time out from reinforcement, for example, has been demonstrated to effectively reduce both noncompliance and related problem behaviors (Carr et al., 1991; White et al., 1972). Researchers found that warnings enhanced the effectiveness of time out in reducing noncompliance (Velasquez et al., 2016). Although it is a common strategy, the ethics of using punishment have come into question (Crosland et al., 2008; Dadds & Tully, 2019; Gershoff et al., 2017). The code of ethics for behavior analysts requires that punishment not be used as a default technology and, in fact, should be considered a last resort.

In addition to other concerns, for children who have experienced abuse and neglect, punishment can cause additional trauma (Dadds & Tully, 2019). Even if it were ethically defensible, the efficacy of punishment would still be a concern. For example, problem behaviors can return when the punishment contingency is no longer in place (Dadds & Tully, 2019). Although punishment may sometimes effectively reduce problem behaviors, especially disruptive behaviors associated with noncompliance, it does not teach the desired behavior and so does not provide a long-term solution (Gershoff et al., 2017).

Behavior Contracts to Address Child Noncompliance

Behavior contracts are one of the most promising interventions for addressing

childhood noncompliance. Behavior contracts have demonstrated success in reducing noncompliance and related problem behaviors and are easy to implement (Mruzek et al., 2007). They also foster collaboration and can improve the relationship between the recipient of the contract and the implementer (Sibley et al., 2014). However, to be successful, behavior contracts must include the elements that have had successful outcomes. Fortunately, because behavior contracts are packaged interventions, it is possible to draw upon successful intervention elements that match the behavior targeted for change for each individual therapeutic situation. Some components must be included in a behavior contract, such as clearly defined short- and long-term goals, clearly defined reinforcers contingent upon desired behavior, and a signed collaborative agreement indicating acceptance of the goals and reinforcers (Stover et al., 2008). However, the way these elements are developed can vary on a case-by-case basis to adapt to the individual situation's needs.

Behavior Contracts Eliminate the Discriminative Stimulus for Problem Behavior

Noncompliance implies that someone has given the child a directive, and the child is refusing to fulfill the directive. This makes the directive itself an antecedent variable that can be manipulated to reduce child noncompliance (Upper et al., 1977). A central component of behavior contracts is a goal setting component (Alwahbi & Hua, 2020; Upper et al., 1977). The importance of goal setting is that it separates the goals from the situation in which the problem behavior occurs. For children who find adults' directives to be discriminative stimuli, or triggers that increase the likelihood of problem behaviors, contracts can provide instruction at a time and place away from the problem behavior, eliminating that trigger (Crosland et al., 2008; Jolivette et al., 2018; Latham, 1994). This means that instead of providing a discriminative stimulus for problem behavior, setting

goals can become a discriminative stimulus that encourages compliance (Alwahbi & Hua, 2020).

The Manner in Which Goals Are Written

Studies have found that the topography of a directive may impact the probability of a child's compliance. One of the most important elements of behavior contracts is that they enable the communication of a clear description of goals (Jibrin & Umaru, 2020). These contracts formalize the process of setting expectations, helping all involved to stay focused on these goals and the outlined process for achieving them (Fitriani, 2018; Sibley et al., 2014). When goals describe the specific behaviors that are required to earn reinforcers, this sets the stage for achievement of these goals (Alessandri et al., 2020). To set a goal, it is necessary to identify and specify target behaviors. This process can help caregivers learn to focus on specific behaviors of concern (Locke & Latham, 2002; Sibley et al., 2014) and can help children, and their caregivers, to compare a child's current performance to a standard (Bandura & Schunk, 1981; Locke & Latham, 2002). One benefit of goal setting is that it can analyze a large task and set smaller discrete goals, which makes it easier for children to comply and helps when noncompliance results from a skill deficit (Chagolla, 2020; Crosland et al., 2008). Research also suggests that the phrasing of a directive should be positive and expressed in terms of what the child is to do rather than what they are not to do (Forehand et al., 2011; Wilder, Nicholson, et al., 2010).

Presenting a directive as a question produces a lower probability of compliance than presenting it as a demand (Forehand et al., 2011). Asking a child, "Can we do this?" or including an implication that the caregiver will assist, "Let's do this," reduces compliance with the directive (Forehand et al., 2011). Similarly, research suggests that

explanations of why a child should comply actually reduce the probability of compliance (Forehand et al., 2011; Wilder, Nicholson et al., 2010) and may even increase the likelihood of accompanying problem behaviors such as verbal or physical aggression or property destruction (Wilder, Allison et al., 2010). Wilder, Allison, et al. (2010) provided one of three types of rationales as part of an instruction and observed an increase in both noncompliance and problem behaviors. They noted that this finding was contrary to available parent training manuals (Wilder, Allison et al., 2010). In contrast, other studies indicate that the topography of the directive is not a strong independent variable, especially with older children (Everett et al., 2005).

Short-Term Goals. Behavior contracts should include short-term goals. Alessandri et al. (2020) investigated the impact of daily self-set proximal goals concerning the final course grade for 160 sophomore college students taking an introductory psychology course. The experimenters hypothesized that setting short-term goals would lead to a focus on goal attainment. The self-monitoring component would lead to knowing if the plan is working. The combination was believed to create increased academic progress. Each subject set their own daily goals and used a diary to self-monitor their progress (Alessandri et al., 2020). In this longitudinal study, an experimental group who set daily proximal goals each morning and evaluated progress each afternoon was compared to a control group of students who did not set goals. Their results indicated that students who self-set and monitored goals made significantly more academic progress than students who did not set goals, but only when the goals were both specific and moderately difficult. Subjects in the experimental group who set nonspecific goals or goals that were either too easy or too challenging, based on previous performance, did not show significant progress compared with control group subjects

(Alessandri et al., 2020).

Long-Term Goals. Long-term goals are important as well. Chagolla (2020) used a behavior contract to collaborate with an adolescent in setting weekly portion-control goals. The researchers used an independent variable that included both behavior contracts with long-term goals consisting of weekly goals and nutrition education and measured the impact on portion control. Similar to the study conducted by Alessandri et al. (2020), Chagolla (2020) incorporated self-monitoring by having the subject use a diary to write down foods consumed and self-determine when goals had been met and reinforcers earned. Their results showed that portion control increased. This included generalization sessions during which the subject ate pizza with family members. Short-term goals were not included in the study (Chagolla, 2020). The use of short- and long-term objectives lends itself to the maintenance of behavioral gains.

Reinforcers

Another crucial element of the behavior contract is reinforcement. Behavior contracts specify reinforcers that can be earned and define how to earn them (Hawkins et al., 2011). By positively rewarding wanted behavior with reinforcers, behavior contracts can make good behavior more likely and the use of punishment unnecessary (Jolivet et al., 2018). Successful behavior contracts often specify strong reinforcers (Wilder et al., 2007). For example, Majdalany et al. (2017) successfully used behavior contracts in which children could earn time with a cell phone contingent on compliance. Similarly, Wilder et al. (2007) allowed children to earn coupons that could be exchanged for time with a preferred item. It is crucial that these strong reinforcers are delivered as specified on the behavior contract adding a consequence strategy to the intervention (Miller & Kelley, 1994).

Through behavior contracts children learn to expect reinforcement for their good behavior. Connell et al. (1993) taught preschool children with developmental disabilities to solicit verbal praise from teachers. Researchers provided training to subjects on soliciting reinforcement, and the behavior was prompted and reinforced. This type of behavior can lead to more significant maintenance as seeking out reinforcement is likely to result in a higher frequency of reinforcement. Although Connell et al. were not using behavior contracts per se, their work, in effect, replicates this core component of the behavior contract intervention. This component teaches subjects to expect specific reinforcers for specified behavior.

Collaboration

Importantly, another benefit of behavior contracts is that the goal setting is done collaboratively. When individuals, including children, participate in setting goals, their probability of meeting goals is enhanced (Locke & Latham, 2002). Although this is well understood in theory, in practice, when a child's behavior is targeted, goals are usually set for them by adults. In having a role in making these goals, behavior contracts allow participants to make choices and exert some level of control (Alessandri et al., 2020; Allen & Polaha, 2003; Gurrad et al., 2002). Behavior contracts prompt more collaborative, civil, and adaptive interactions between parents and children (Sibley et al., 2013) as they develop and follow the plan together (Allen & Polaha, 2003). They also discourage arguments in favor of positive interactions (Sibley et al., 2014). The positive instructions, in turn, make problem behaviors less likely and can replace negative interactions between the caregiver and child and reduce the need to criticize errors (Sibley et al., 2014).

The collaborative nature of behavior contracts can teach children, and,

importantly, parents, how to negotiate expectations and reinforcers. Sibley et al. (2014) assessed interactions between parents and their teenagers before training parents to implement behavior contracts. They observed that, for families where the parent and teen tended to avoid interacting with each other preintervention, the process of negotiating the behavior contract caused an initial, temporary increase in conflict. In contrast, this initial result was seen less often for children whose problem behaviors were reinforced with attention during baseline. In these families, the conflict level was already high. However, although sometimes the contract caused initial conflict, both groups found that the contract taught participants how to negotiate with each other and agree upon expectations, ultimately reducing friction. Importantly, Sibley et al. suggested that behavior contracts teach the parents to reduce noncompliance and other problem behaviors while reducing conflict.

Self-Monitoring of Progress

Successful behavior contracts require ongoing monitoring of goals and progress, and the contracts themselves often specify the data that can visually demonstrate progress (Cooper et al., 2020; DiGangi et al., 1991). Monitoring goals can encourage all involved to learn to modify goals as they learn which behaviors are instrumental to progress and begin to focus on them (Locke & Latham, 2002). Behavior contracts encourage participants to self-monitor their goals to enhance outcomes (Alessandri et al., 2020; Chagolla, 2020; Connell et al., 1993; McKenna, 2020). This is true for a few reasons. Because a behavior contract is a written document, it facilitates clarification of misunderstandings. Requiring the restatement of expectations and reinforcers further ensures that there is no misunderstanding. Learning to self-monitor is an essential skill and may be an indispensable prerequisite for the success of interventions such as

behavior contracts (Bandura & Schunk, 1981; Connell et al., 1993; McKenna, 2020; Otero & Haut, 2016). That is, keeping data on one's own behavior and identifying when a reinforcer has been earned helps children learn to manage this by themselves. Self-monitoring is enhanced and maintained when others reinforce consequences as it provides valuable feedback (Otero & Haut, 2016). When children are unable to self-monitor, they may also be unable improve their compliance.

In a behavior contract study conducted by Carroll et al. (2011), 10 parent-child dyads used self-monitoring to increase diabetic adolescents' compliance with glucose monitoring. They also sought to reduce the parents' nagging behavior to improve the relationship between parent and child. The experimenters reported success in improving compliance, decreasing parental nagging, and improving the relationships. The study used a diabetes self-management profile, a quality-of-life score, and the Cornell Parent Behavior scale to determine the results. Parents believed that their children improved compliance with glucose monitoring, and children believed that their parents reduced nagging. Parents and children expressed feelings their relationship had improved. Importantly, children also significantly reduced their levels of hemoglobin A1c, suggesting that the behavioral benefits translated into improved health. This study was difficult to evaluate and would be difficult to replicate as the procedures were not clearly defined. For example, it was unclear if a specific reinforcer was used for the children's compliance. Their parents agreed to do less nagging if they participated in the program, but there was no reinforcer specified for reductions in nagging. Because frequencies of behavior were not collected, it was difficult to determine the extent to which there was an improvement.

Chagolla (2020) studied a self-monitoring component to goal setting in a behavior

contract intervention. This study had one subject: a 17-year-old female diagnosed with autism spectrum disorder. Weekly goals were made to reduce consumption of specific foods. A multiple baseline across foods was used, targeting pizza first and potato chips second. Data were collected using a food diary kept by the subject during two meals per week. The subject also determined if the weekly goal was met. A special treat was designated weekly to reinforce meeting the goal for both meals. Overall, the subject decreased her consumption of these foods when the behavior contract with self-monitoring was in place. Only one session was recorded in which the subject did not meet her goal. A confounding variable was reported: the subject was using her phone while eating and failed to record all the portions. Generalization probes indicated that the subject maintained behavioral gains when she ate a meal with a friend and when she ate a meal with her family, in which they all ate pizza (Chagolla, 2020).

McKenna (2020) investigated the impact of combining goal setting with self-monitoring on the disruptive behavior of children with ADHD. A multiple baseline across subjects design was used. The subjects were five elementary school students diagnosed with ADHD. Data were collected during observation periods. The results suggested that this intervention combination may be effective, but the results were mixed. Three of the five subjects decreased disruptive behavior during the self-monitoring phase of the study. The same three subjects demonstrated further improvements during the self-monitoring with the goal-setting phase. One of the three subjects demonstrated small but significant improvements in this combined phase (McKenna, 2020). The other two subjects did not show this result, and one of the two remaining subjects actually increased disruptive behavior slightly. Another subject maintained the level of disruptive behavior.

Some behavior contracts use a self-graphing component for monitoring. DiGangi

et al. (1991) added a self-graphing component to their behavior contract intervention. They investigated the impact that self-graphing had on the behavior of two students with learning disabilities. They examined the relationship between self-evaluation and self-reinforcement along with self-monitoring and self-graphing. The two students self-monitored and self-graphed their on-task behavior. The results were unexpected. Not surprisingly, self-monitoring alone resulted in an increase in on-task behavior for both subjects; however, it did not increase accuracy for either subject. With the addition of self-graphing, productivity increased substantially for one subject, but not at all for a second subject (DiGangi et al., 1991). Neither on-task behavior nor accuracy increased any further with the introduction of self-reinforcement. In fact, on-task behavior actually decreased when self-reinforcement was introduced. However, accuracy and productivity did increase for one subject. The reinforcer used during the self-reinforcement condition was verbal praise in the form of a statement, “I did a really good job.” It would be interesting to compare other reinforcers to determine if they would have an impact, or to confirm that social praise is in fact highly preferred.

Maintenance of Behavioral Improvements

The maintenance of skills and behaviors taught in therapy are important, and these behaviors need to generalize to settings outside of therapeutic settings if results are to be meaningful (Allen & Warzak, 2000; Bearss et al., 2015). Several studies examined maintenance of behavior change (Allen & Polaha, 2003; Briggs et al., 2018; Fisher et al., 2019). For example, when a behavior contract was used to eliminate enuresis, three children, including two foster children, demonstrated maintenance of the elimination of enuresis at a 3-month follow-up (Stover et al., 2008). Allen and Polaha (2003) included a maintenance phase as they evaluated individualized behavior contracts' effects to

increase primary school students' on-task behavior. They reported that on-task behavior increased significantly with the individualized behavior contract introduction and saw a drop in on-task behaviors for all three subjects when the intervention was removed. However, the on-task behavior did not drop all the way to baseline levels. During the third baseline, the experimenters observed that on-task behavior either did not decline or did not decline significantly, meaning that the behaviors of all three subjects maintained. Although a definite answer for what caused the maintenance in behavior change for the three subjects was not available, it appears that learning did take place. The children may have learned to access reinforcers for on-task behavior even after the behavior contracts' termination (Allen & Polaha, 2003).

Maintenance is also vital for parents' behavior. If parents do not maintain the skills and behaviors taught in therapy, their children's problem behavior may return (DeGarmo et al., 2004; Mitteer et al., 2018). To create a durable intervention, the threats to maintenance must be understood, and reinforcers of recovered problem behaviors identified (Mitteer et al., 2018). While the literature provides examples of studies that focus on relapsed child behavior (Allen & Polaha, 2003; Briggs et al., 2018; Fisher et al., 2019), and despite the obvious importance of maintenance of parental behavior, few studies analyzed this factor, with the exception of Mitteer et al. (2018).

Mitteer et al. (2018) analyzed regression in caregivers' behavior by using a laboratory model where experimenters played the role of children engaging in problem behavior. There were three phases to this study. The first phase took place in a home-like setting. Any reinforcers parents provided for child behavior terminated the problem behavior of the child. Phase 2 used a clinical setting. Like Phase 1, a parent's behavior of reinforcing a child's disruptive behavior was negatively reinforced with the termination

of destructive child behavior. A third phase returned to the home-like setting, but the parent's use of reinforcement for child maladaptive behavior did not affect the child's disruptive behavior. Mitteer et al.'s study was unique in that they examined parent behavior and the way children reinforce parents' maladaptive behavior. They concluded that more research is needed in this area.

Where Behavior Contracts Are Used

Behavior contracts are used in many settings. Contracts can reduce child problem behaviors in schools, in residential facilities and foster homes (Edgemon et al., 2020; Stover et al., 2008), in juvenile justice facilities (Jolivette et al., 2018), in family homes (Carr et al., 1991), and transition between home and school (Cancio et al., 2004).

School Setting. Most studies examined behavior contracts implemented in schools (Allen & Polaha, 2003; Cancio et al., 2004; Evans et al., 2005; Gurrad et al., 2002). When used in schools, behavior contracts attempt to incorporate reinforcers to reduce problem behaviors and increase appropriate academic behaviors, in the hopes of increasing the likelihood that students will engage in these adaptive behaviors (Gurrad et al., 2002). Fitriani (2018) found favorable results when using a behavior contract to reduce problem behaviors that interfered with the class routine and improve social interactions between peers during an intensive English course. Sixteen subjects between the ages of 10 and 12 years participated in this study. Behavior contracts were not individualized; rather, the researchers made one contract for the entire group. The study team did not complete a functional assessment prior to the intervention; instead, the behavior contract was used to change observable problem behavior and change non-observable ideas to facilitate personality development and attitudes. The experimenters used a behavior checklist to collect data on positive behaviors expected of the students. A

list of rewards and penalties was displayed for the students, but the study did not disclose the actual rewards and penalties or the behaviors they were contingent on. Experimenters noted improvements for all students and stated in their discussion that female students performed better in terms of their behavior and attitude than their male counterparts. They stated that students had more confidence to speak up following the behavior contract; although, it should be noted that they did not collect data on the behavior of speaking up. They noted that available learning time increased, and students that used the contract received better grades.

A study by Mruzek et al. (2007) yielded promising results for employing a contingency contract procedure to encourage compliance with classroom rules. Their program was implemented in an elementary school, with two male participants: one 10-year-old with a diagnosis of autism spectrum disorder and one 9-year-old with ADHD and probable Asperger's disorder. Both students engaged in high-frequency problem behavior that prevented them from making academic progress, including tantrums, loud vocalizations, and physical aggression. Researchers continually modified the contract for both students as they made progress, helping to ensure that the contract continued to meet their needs (Mruzek et al., 2007). To evaluate results, researchers used a changing criterion design. Both students demonstrated significant improvement in following classroom rules, and experimenters observed immediate behavioral improvements once the behavior contract was initiated. Although the researchers found the contracts easy to implement, the one-to-one, teacher-to-student ratio employed in this study may be impractical for others to utilize (Mruzek et al., 2007). In addition, researchers did not provide information about the teachers' competency training, making it difficult to ascertain how well the teachers adhered to the prescribed treatment (Mruzek et al., 2007).

Gurrad et al. (2002) used a behavior contract to increase compliance with reading assignments. There was one subject in this study, a child in middle school diagnosed with ADHD. The child earned points contingent on compliance with reading lessons and for refraining from interrupting. Points could be exchanged for candy, which was a reinforcer selected by the subject. The A-B-A-B reversal design was used. Gurrad et al. (2002) saw interrupting decrease markedly from a baseline (A) average of 11 incidents per reading session, to zero incidents for three consecutive sessions (B) once the behavior contract was implemented. Interrupting did increase significantly during a second baseline (A) but did not return to baseline levels.

During a second B phase, interrupting immediately went to zero and remained at zero for three consecutive sessions (Gurrad et al., 2002). Compliance with reading increased as well. The improvement in compliance was less dramatic, as baseline data revealed that compliance was reasonably high during the first A phase, with the student reading approximately 90% of the required time. Compliance quickly rose to 100% during the first intervention phase. Interestingly, when the behavior contract intervention was removed, compliance fell to below baseline levels, to approximately 80%. This result suggests that removing a behavior contract could worsen the original problem. However, drawing this type of conclusion from this data would be premature, as there was only one subject and only two baseline/intervention combinations. It would be interesting to see if this trend would continue in further A-B transitions or if a similar result would be observed for more subjects. The authors of this study discussed the possibility that this intervention might be too time-consuming for a teacher to implement as a potential limitation of the study.

One ongoing problem in school settings can be truancy, where student learning is

confounded because the student fails to attend class. According to Enea and Dafinoiu (2009), behavior contracts can be useful in reducing truancy behavior in school-based therapy sessions. Their study reported a 61% decrease in truancy rates for the experimental group and no reduction in the control group's rates. However, subjects had not been randomly selected for the study and were not randomly assigned to groups. Some subjects in the experimental group had excessive absences from therapy sessions or dropped out of the program altogether. In some cases, experimenters determined that missing a session was excusable, such as when it was said to be for a holiday, illness, or a death in the family. Nonetheless, missed sessions confounded the data.

Researchers have examined whether behavior contracts can improve children's social interactions in schools. Alwahbi and Hua (2020) implemented behavior contracts in a school setting and used peers to prompt and reinforce the behavior. The participants were three boys with diagnoses of autism spectrum disorder, aged 8, 9, and 11 years. The peers were typically developing children, 11 and 12 years old, trained to prompt social interactions. The study used a multiple baseline design across the three subjects. During an A phase, data were collected on social interactions with no intervention in place. During a B phase, trained peers interacted with the subjects. During Phase C, one of the experimenters implemented an individualized behavior contract on a 1:1 basis. The experimenters wrote the contracts, set the goals, and provided the reinforcers during contract meetings.

Behavior contracts for the three subjects targeted increased social interactions, while contracts for the six peer coaches targeted prompting, modeling, and reinforcing the subjects' social interactions. In the A and B phases, before implementation of the behavior contracts, social interactions did not increase for any of the three subjects, and

the peer coaches did not increase their coaching behavior. However, when behavior contracts were initiated in the C condition, social interactions increased for all three subjects, and peer coaches' target behaviors increased markedly. This result is exciting, and especially relevant for this study, as experimenters not only provided behavior contracts for subjects, but also for coaches. Although coaches' target behaviors increased with the use of behavior contracts, it is surprising that the coaches' behavior maintained following training (Alwahbi & Hua, 2020).

One issue in adopting behavior contracts in the schools is teachers' willingness and ability to adhere to the program. Some studies suggest that teachers often do not correctly implement behavioral interventions even when they receive support (Evans et al., 2005; Sibley et al., 2014). This may be mitigated by bringing in parents to work with teachers when implementing behavior contracts that target school and academic behavior (Sibley et al., 2014). A survey of over 1,000 parents conducted by Epstein (1983) found that most parents are not involved in teachers' interventions. According to their survey results, parents had more favorable views of the teacher, the school, and teachers' initiatives when their involvement was sought (Epstein, 1983). This suggests that contracts should often be a collaboration between school and home.

Behavior Contracts in Home Settings to Support School Behavior. Some studies used behavior contracts in home and school, as the desired behavior, academic work, is desired in both settings (Cancio et al., 2004; Hawkins et al., 2011). School/home behavior contracts often focus on homework as an important academic behavior (Miller & Kelley, 1994). Homework is, by definition, carried out in a home setting, and may complicate student compliance by introducing additional, home-based problem behaviors. Students who do not comply with homework often bring in the maladaptive

behaviors they already employ at home that enable them to escape or postpone unwanted tasks (Cancio et al., 2004; Hawkins et al., 2011). These home-based problem behaviors then interfere with children's school success (Miller & Kelley, 1994). Supporting this idea, Miller and Kelley (1994) observed that behavior contracts were less successful in increasing homework compliance for students who engaged in challenging problem behaviors at home. It may be necessary for behavior contracts to also target other problem behaviors at home (Miller & Kelley, 1994).

Cancio et al. (2004) utilized a behavior contract as an independent variable to determine if six students with emotional and behavioral disorders in an integrated classroom could use self-monitoring and parent-implemented behavior contracts to improve their compliance with homework completion and accuracy. The training was conducted for the children at school. Experimenters taught parents to facilitate the process at home. A contract was in place both at school and in the homes that included a written expectation for completing all homework assignments and specific rewards contingent on meeting this expectation. Independent variables included parent training. Experimenters taught parents to develop a menu of reinforcers to use and to solicit the child's participation in identifying a variety of reinforcers to avoid satiation. The contract also specified the location in which homework was to be completed and the use of self-reinforcers. Parents agreed to create an environment for study with an equipped and uncluttered desk. The parent and child signed the contracts and reviewed them daily. Dependent variables included the percentage of homework completed and its accuracy (Cancio et al., 2004). Cancio et al. provided for a treatment fidelity check to be made for each student at least once per week by a clinician. A point-by-point reliability coefficient was determined comparing the student data to that of their parent. Parent and student data

were aligned 96% of the time.

Perhaps the most unique characteristic of this study, and the factor most relevant to the present study, was that experimenters provided rewards for the parents' behavior, including books on positive parenting and gift certificates (Cancio et al., 2004). Rewards were given twice during the semester in which the intervention was in place on an intermittent schedule. There was no mention of a criterion to earn the reinforcers, and no data were reported on the effect the rewards had on parental behavior. Still, to this researcher's knowledge, this is the only study that attempted to reinforce parental behavior of implementing procedures instead of just attendance or being on time for parent training.

All six subjects improved in both homework compliance and accuracy (Cancio et al., 2004). Average homework completion was 2% (0% for three of the subjects). During the intervention, percentages for compliance improved to 81% to 100%, with an average of 92%. Accuracy was also 2% at baseline and improved to 80% to 96% accuracy with an average of 89%. The low, stable baseline rates of completion and accuracy may have had some predictive value for success. Experimenters reported some variability and confounding variables. One student was arrested for shoplifting during the intervention phase, resulting in little homework completion. Another student had low attendance. Despite this, homework compliance and accuracy were markedly higher during the intervention phase.

Hawkins et al. (2011) also implemented behavior contracts both at school and in the home setting, and this crossover in venues proved to be a valuable component for school success. All four subjects improved in the school setting, and once procedures were implemented at home, problem behaviors further decreased at school. A limitation

of this study was that the experiment included no maintenance phase, so it is unclear if gains reported maintained once procedures were no longer in place. Also, there was no interobserver reliability data reported.

Behavior Contracts in Home Settings. Despite the high incidence of noncompliance reported by caregivers, few studies have been conducted using behavior contracts in homes (Edgemon et al., 2020). The behavior contracts that were executed at home have been shown to improve behavior at school (Smith, 1994). Smith (1994) used behavior contracts implemented by parents who were asked to target behaviors exhibited by their children at school. There were 24 children in this study; 12 were assigned to an experimental group and 12 to a control group. Parents of children in the experimental group identified target behaviors, wrote objectives, and delivered reinforcers when goals were met (Smith, 1994). For participants in the experimental group, 65.27% of objectives were met, compared to 19.44% for the control group. These results suggest that behavior contracts implemented at home by parents positively impacted children's behavior at school (Smith, 1994).

Behavior contracts may also reduce problem behaviors occurring in residential settings. A study conducted by Edgemon et al. (2020) evaluated the effectiveness of using behavior contracts to reduce problem behaviors of children in residential facilities and foster homes. The results were mixed, showing a decrease in problem behavior for only six of the 11 subjects. During the baseline phase, subjects were enrolled in a token economy program already in place where they resided, involving a level system in which children gained access to higher quality reinforcers for attaining a higher level.

Part of the lack of success reported may have been due to the data instability at baseline and the extensive range of time contracts that were implemented: a range of 5 to

50 weeks (Edgemon et al., 2020). The six subjects who demonstrated improvement when the individualized behavior contract was in place all had a stable or at least an increasing trend in problem behaviors at baseline. The other five students received the intervention despite the fact that they never demonstrated steady-state responding during baseline. Behavior change was not significant for these five subjects. Importantly, problem behaviors did not increase for any of the subjects with the introduction of the behavior contracts. These results might suggest that behavior contracts could be useful to reduce problem behaviors, including noncompliance, aggressive behaviors, and sexual behaviors, for children in juvenile justice facilities and foster homes when baseline data shows stability. When steady-state responding is not observed during baseline, however, implementing a behavior contract might be of little value.

Robinson and Sheridan (2000) used a behavior contract in a home setting to reduce noncompliance behavior with bedtime. In their literature review, the authors reported finding no studies using behavior contracts for this specific task (Robinson & Sheridan, 2000). In their study, parents implemented the behavioral contract called the mystery motivator in that the reinforcer was selected randomly. Subjects included three parents and their four children. The topography of noncompliance with respect to bedtime included arguing, crying, yelling, throwing objects, and physical aggression. A multiple baseline across subjects' design was used.

Results reported that three of the children demonstrated significant improvement in bedtime compliance (Robinson & Sheridan, 2000). They collected follow-up data for two of the four subjects; the other two declined to participate in the follow-up because it was summer at the time of follow-up data collection, and they did not wish to implement a bedtime routine. They reported confounding variables for the subject who showed only

minimal improvement, including the child being temporarily removed from her home and then returned due to allegations made against the parent (Robinson & Sheridan, 2000).

This subject also showed the most significant degree of variability during baseline observations, indicating that variability of responding during baseline may be a predictor of limited to no success with this intervention, a finding similar to that of Edgemon et al. (2020). One of two subjects maintained improvements during a follow-up session. The other subject had only shown minimal improvement during the experimental phase and no progress during the follow-up phase (Robinson & Sheridan, 2000).

Upper et al. (1977) demonstrated the utility of teaching foster parents to use behavior contracts. In this study, college students were first trained as behavioral counselors who, in turn, taught foster parents in an experimental group to use the contract for children who were discharged from psychiatric facilities into their foster homes. Parents in a similar setting from a control group received no training. Data were collected in two ways: through observation of child problem behavior frequency during baseline and treatment phases and from a behavioral observation questionnaire. Scores from the behavioral observation questionnaire showed better improvement for experimental group subjects. In addition, data collected on children's behavior in the experimental group improved over baseline (Upper et al., 1977).

No intervention can be useful if not implemented. Parents cannot learn from training classes they do not attend. Some studies addressed problems with parental attendance in parent training classes and a lack of adherence to intervention procedures (DeGarmo et al., 2004; Kazdin et al., 1997). Nock and Kazdin (2005) created an intervention for increasing motivation by helping parents develop solutions for barriers to adhering to the intervention. Reinforcers for adherence to the intervention were not

included in the strategy (Nock & Kazdin, 2005).

For parent-implemented behavior contracts to be effective, parents' adherence to consistently implement the behavior contract as prescribed is necessary (Barton & Fettig, 2013). Therefore, if a change in child behavior is desired, the parent's behavior must also change. In addition, changes in parental behavior must be maintained to prevent a relapse of noncompliance and other problem behaviors associated with it. The present literature review found limited studies that analyzed the controlling variables or interventions to resolve the issue of parental behavior (Allen & Warzak, 2000; Bearss et al., 2015; Mitteer et al., 2018).

Parent Training

One crucial component of effective behavior contracts is parent training. Research indicates parents' important role as collaborative agents of change for child behavior (Barton & Fettig, 2013; Smith, 1994; Stocco & Thompson, 2015). Bernal et al. (1980) noted that the lack in available clinicians spurred initial research into parent training. However, later studies recognized parents' important role, and therefore trained parents to implement interventions, such as behavior contracts, to improve their children's behavior (Mruzek et al., 2007; Robinson & Sheridan, 2000; Scahill et al., 2016; Smith, 1994).

When parents implement interventions, children's behavioral improvements are more likely to generalize to other situations as, in most cases, parents are with their children more than anyone else. They are likely to be with their children in different settings and with other people and in various contexts (Forehand et al., 1979). If parent training is to help children's behavior to generalize successfully, parents' behavior must also generalize so that they can continue to reinforce children's desirable behavior across

environments. Thus, a goal of parent training is often to change how family members interact with one another (DeGarmo et al., 2004; Lyon & Budd, 2010; Sibley et al., 2014). Forehand et al. (1979) investigated the extent to which parent training provided in a clinic would translate to a change in the parents' behavior during follow-up observations conducted in their homes. The subjects were 10 mother-child pairs. They found that children's behavior did generalize to the home setting. A second study involved eight children and their mothers. They assessed children's noncompliance behavior at home and school pre- and post-intervention. Both parent and child behaviors changed in the desired direction during follow-up over baseline measurements at home. However, the children's behaviors were not observed to change at school. The lack of change at school indicates that the training changed the parents' behavior to support improvements in the child's behavior. This study was unusual because parental behavior was also a dependent variable (Forehand et al., 1979).

Parent behavior is key to behavior contracts, because when parents do not administer positive reinforcement on a consistent schedule, their children's improved compliance can extinguish (DeGarmo et al., 2004). DeGarmo et al. (2004) studied parents' behavior and contacted parents via telephone in the middle of the week to remind and encourage them to use the strategies they learned. This also enabled mothers to report problems and receive coaching rather than abandon a technique (DeGarmo et al., 2004). However, in their 12-month follow-up, DeGarmo et al. observed regression in parenting skills. Reinforcement-based strategies may not have been used consistently, potentially contributing to the relatively low use of learned skills. Other studies did not follow-up by measuring long-term results, calling their interventions' long-term effects into question.

To increase parents' ability to use learned skills with their children, some studies have provided parents with ongoing clinical feedback (Lyon & Budd, 2010; Sibley et al., 2013). In a study incorporating behavior contracts and parent training, Sibley et al. sought to reduce conflict between adolescents diagnosed with ADHD and their parents. This intervention package included 320 hours of direct services to the adolescents, 15 hours of parent behavior management training in a classroom setting, and 8 weeks of daily clinical feedback on their implementation of the behavior contract. After the program, parents and their teenagers participated in sessions with a clinician to collaborate on an ongoing plan. The plan was specific and included information about the parents' and teenagers' schedules and identified specific reinforcers for short-term and long-term goals. The results of this study reported on both the frequency of arguments and the ratings of intensity. Both parents and adolescents collected data. According to their results, conflict decreased by 70-85% during a post-intervention phase. Interestingly, adults and adolescents reported similar frequencies and levels of intensities of arguments. Of the 20 participants, 16 improved significantly in decreasing arguments (Sibley et al., 2013).

The therapeutic relationship can naturally include reinforcers for parents. Although it is well understood that clinicians' pair themselves with reinforcers deliberately for children, a similar dynamic is often inadvertently present with parents. In this case, however, reinforcement is often attention and social praise (Sibley et al., 2014). Some clinicians establish themselves as co-collaborators, going through the process with the parent (Sibley et al., 2014). Some studies have parents deposit money that they can earn back contingent upon attending the classes and completing assignments. Bernal et al. (1980) used this approach and reported success. However, it is unclear that this will translate into applying techniques learned in class to real-life situations consistently or at

all, as most studies that used behavior contracts are of short duration, with no maintenance phase, making it unclear if parents would continue to implement procedures after the intervention was no longer monitored.

Similarly, setting goals for parents is not a new idea, although it has been recently carried out using new technology (Baretta et al., 2019; Latham et al., 2018). Cell phones have been used to increase communication but have also been used to prompt subjects to engage in recommended goal-setting strategies (Bigelow et al., 2008). Bigelow et al. (2008) did not specifically report utilizing the cell phone to reinforce parent behavior but did mention sending text messages to parents with words of encouragement (Bigelow et al., 2008). Baretta et al. (2019) investigated the goal-setting component of physical activity apps. A six-item scale was used to identify the presence or absence of goal setting within 40 activity apps and factors correlated with goal attainment. Their results found that while goal setting was present in most of the apps, the goals generally did not take the individual's baseline performance into account. Additionally, the application did not include goal re-evaluation. A component positively correlated with positive outcomes was setting goals that are observable and measurable, which they found in 95% of the apps reviewed. Only 25% of the apps tailored goals to the person's ability level (Baretta et al., 2019). Setting specific time frames for goals helped users make progress. No studies, to the writer's knowledge, have used apps to reinforce parental adherence to behavior contracts.

Conclusions

The literature on behavior contracts suggests that they are an ideal intervention to reduce the serious problem of child noncompliance, with which many parents struggle (Edgemon et al., 2020; Robinson & Sheridan, 2000). The importance of this behavior is

clear, as child noncompliance can result in detrimental effects on a child's health (Carroll et al., 2011), academic success (Allen & Polaha, 2003; Cancio et al., 2004; Evans et al., 2005; Gurrad et al., 2002), placement in more restrictive environments (Edgemon et al., 2020; Stover et al., 2008), and overall development (Robinson & Sheridan, 2000). Yet many of the interventions used to treat noncompliance are ineffective. Although behavior contracts can be an excellent choice to reduce child noncompliance, they must be carefully constructed (Jibrin & Umaru, 2020). When designing behavior contracts, clinicians often omit important components needed to enhance their effectiveness. In addition, even when a parent implemented intervention is written with best practices included, parents may implement them improperly, inconsistently, or not at all (Bigelow et al., 2008).

Parent training can help to ensure that parents implement behavior contracts correctly (Lyon & Budd, 2010; Sibley et al., 2013; Upper et al., 1977). Unfortunately, most parent training studies do not measure the correct implementation of procedures at home, leaving the question unanswered as to whether practices will continue to be implemented at home in the absence of clinical oversight (Mitteer et al., 2018). Parents' reinforcement of noncompliance and associated problem behaviors by providing attention as a consequence (Everett et al., 2005; Schieltz et al., 2019), or allowing escape from demands (DeGarmo et al., 2004; Patterson & Chamberlain, 1988), is a primary threat to this intervention's integrity. When parents allow attention to reinforce noncompliance, they may sabotage their own attempts to reduce this behavior if it is motivated by attention. Similarly, when they allow problem behaviors to enable children to escape from the demand, they help to reduce the behavior contract's integrity.

When behavior contracts are successful, it is because creating objectives and

presenting them proactively prompts compliance (Alessandri et al., 2020; Jibrin & Umaru, 2020). Clinicians know how to write behavior contracts that include the reinforcers necessary to establish and maintain desired behavior. Yet, this same strategy has not been used to reinforce parents' behaviors in implementing behavior contracts. It stands to reason that specifically targeting desired parental behavior will result in its occurrence. The same parent behavior that will result in the successful implementation of behavior contracts is more likely to maintain if reinforcers follow parents' behavior.

The current study investigate how targeting caregiver behavior and identifying reinforcers for those behaviors affect the proper implementation and maintenance of contingency contracts by caregivers. The study focused on parents' behavior, potentially empowering parents to better manage their children's behavior without further outside intervention. Finally, this study identified reinforcers for the parents' behavior and analyzed the extent to which this resulted in the maintenance of parental target behavior, leading to lasting, meaningful change.

Research Questions

The following research questions were established to guide this applied dissertation:

1. How will targeting caregiver behavior and identifying reinforcers for their own behaviors affect caregivers' implementation of behavior contracts?
2. What will parent perceptions be about the impact of their use of a behavior contract on their child's behavior?
3. How do parents perceive the ease of implementation of behavior contracts to improve their child's behavior with the intervention of a contract of their own for treatment fidelity?

Chapter 3: Methodology

This study evaluated the impact of using a behavior contract to modify parent behavior. The researcher created a behavior contract for parents targeting objectives for parent behavior and identifying reinforcers for the parent's progress in improving their child's behavior. This was identical to the procedure parents used in creating behavior contracts to improve their child's behavior. The parents had targeted objectives for using a contract to modify child behavior and identified reinforcers for progress.

Participants

The researcher contacted three parents referred to a behavior analysis agency in Miami, Florida, owned by this researcher to obtain services for a child engaging in problem behaviors associated with parent requests. The researcher called the parents and told them that she was conducting research on parents' use of behavior contracts to improve their child's behavior as part of dissertation research. All three potential participants expressed interest in participating in the study and scheduled an appointment to meet with this researcher in the office. The investigator met with each potential participant separately in the office to review the consent form.

To qualify for this study, potential participants identified one child and committed to monitoring this child's behavior for a 7-day period without intervention. All three potential participants signed a consent form indicating two things: that they understood the data collection requirements and that they would not receive advice from the experimenter on how to handle their child's problem behaviors during this period. One parent did request advice during baseline data collection. The experimenter reviewed the guidelines with the parent. The experimenter recorded their questions and discussed them with the parent once baseline data collection was

completed.

To qualify for this study, potential participants committed to monitoring their child's behavior for 7 days, followed by an evaluation determining if noncompliance and associated problem behaviors were clinically significant, as described below. The investigator asked interested parents to sign a consent form indicating two things: that they understood the data collection requirements and that they would not receive advice from the experimenter on how to handle their child's problem behaviors during this period. For parents who requested advice during baseline data collection, the experimenter reviewed the guidelines with the parent. The experimenter recorded all questions and discussed concerns with parents once baseline data collection was completed.

Inclusion in the study depended on the presence of clinically significant symptoms of the participant's child during the 7 days. The parents collected data using a noncompliance and associated problem behaviors data sheet for 7 consecutive days. Two different criteria allowed for inclusion in the study. To meet one criterion during the 7-day period, children must have exhibited a minimum average frequency of five requests not complied with and 20 problem behaviors per day. Alternatively, potential participants could also have been selected if their child's noncompliant behavior caused physical harm to any person (including the child engaging in the behavior) at least twice during the 1-week observation. Physical harm could have included scratches, bruises, broken objects, or someone expressing that they felt pain due to the child's noncompliant action. The researcher would have excluded a parent from the proposed study if they did not consent to participate in the full training, if their child did not meet requirements for symptom severity as outlined above, or if the child had a

diagnosed IQ below 70 as reported by the parent.

The first three potential participants began the 7-day data collection at the same time; however, none of them completed 7 days of data collection. At that point, one potential participant decided not to participate. A new potential participant was selected, and all three potential participants began data collection on the same day. The experimenter sent reminders three times during the week. All three participants completed the data collection and qualified for the study.

Instruments

Several instruments were used in the present study. A noncompliance and associated problem behaviors data sheet was used to determine if potential participants qualified for the study. The study used a competency checklist (see Appendix A) taken from the Tools for Positive Behavior Change program (Van Camp et al., 2003) to measure adherence to participants' use of the behavior contract intervention. A behavior contract (see Appendix B) was provided to parents to use in modifying their child's behavior and was also used by the researcher to set goals for parent behavior. Finally, the Parent Perceptions Questionnaire was used as a social validity measure.

Noncompliance and Associated Problem Behavior Data Sheet

A noncompliance and associated problem behaviors data sheet was used by parents to collect data on their child's behavior. This data sheet was used to identify potential participants who met the inclusion criteria based upon the frequency and severity of their child's noncompliant behavior (Cooper et al., 2020). The frequency datasheet used in the current study was designed to collect data for a single day, with a new sheet used for each subsequent day. The sheet was expanded whenever there were not enough rows available to document every instance of child noncompliance within a

1-day collection period. The total frequency reflects the total sum of all instances of noncompliance and associated problem behaviors for that day. Page 1 of the datasheet contained a list of topographical definitions of behaviors associated with noncompliance. A row was included to record the time of each instance of a child's noncompliant behavior, the activity the child was engaging in when the directive was given, and the directive issued. Each row included boxes for tallying associated problem behaviors. An additional box was designated to indicate a tantrum's duration and another to indicate any physical harm.

Competency Checklist

This study used a checklist data sheet taken from the Tools for Positive Behavior Change program (Van Camp et al., 2003) that breaks down the process of using a behavior contract into small steps. This data sheet measured how many of the steps in the intervention each parent used. Each step was written on a separate line on the data sheet. For each date a behavior contract was implemented, the observer marked a 1 if the step was performed independently and a 0 if the action required prompting. The experimenter calculated a percentage by dividing the number of steps performed independently by the number of steps that required prompting.

There were 19 steps outlined in the checklist that were used by the parent participants to administer a behavior contract. The first step involved the participant setting expectations at a time in which no problem behavior was occurring. The following two steps involved the participant using a relaxed tone of voice and body language. Another step consisted of starting the meeting positively by either giving a compliment or identifying reinforcers that can be earned, so the child pays attention right away. Expectations were to be phrased positively regarding what the child is expected to do,

rather than what they are not to do. The parent was to emphasize what the child can earn instead of what the parent will give them. Next, participants were to ask the child to restate the expectations. In a final step, parents were instructed to not react to inconsequential problem behaviors (i.e., referred to as junk behavior) during the behavior contract meeting, such as whining or eye-rolling.

Objectives written were to be achievable and based on their child's current performance, taking baseline data into account. When reviewing the contract, participants were to notice expectations met and use praise if an expectation was met. Instructions guided participants to review the contract with the child by asking the child to restate the expectations and the consequences. No lecture or further comment about not meeting the expectation was to occur. Once again, participants were not to respond to junk behavior that occurs as they reviewed progress with their child. Although there was a focus on not providing attention to problem behaviors that are inconsequential, participants were instructed to briefly answer questions and discuss concerns that the child initiated and renegotiate aspects of the contract if requested by the child.

Behavior Contract

The researcher provided a behavior contract template to each participant taken from the Tools for Positive Behavior Change program (Van Camp et al., 2003). Each contract specified the beginning and end date for the contract to be in effect. It also specified a daily and weekly time for the contract to be reviewed. A space was provided for daily and weekly expectations as well as reinforcing consequences that could be earned for meeting the expectations. A place was designated for the child and the parent to sign the document.

Parent Perceptions Questionnaire

The researcher presented a 10-question Likert-scale questionnaire to caregivers at the conclusion of the study. The questionnaire was designed to assess parent perceptions of using a behavior contract to improve their own behavior when implementing a similar contract strategy with their child. The questionnaire also sought to answer how difficult parents found using a behavior contract to be. This questionnaire resembles other social validity assessments commonly used in studies where parents implement an intervention to impact their child's behavior (Barton & Fettig, 2013; Bigelow et al., 2008). The Likert scale revealed scores for each statement ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Procedures

The following procedures detail the present study's use of a behavior contract to target parental behavior. Parents served as the participants in this study. The experimenter identified reinforcers for the parent's behavior. This study followed the Tools for Positive Behavior Change curriculum, developed by the University of South Florida's Behavior Analysis Services Program (Van Camp et al., 2003) for setting expectations and using a behavior contract. This intervention was unique because reinforcers were specifically identified for parents' behavior instead of targeting the child's behavior.

Design

This study used a multiple baseline across participants design to measure the effectiveness of a behavior contract intervention on parental adherence (Alwahbi & Hua, 2020; Robinson & Sheridan, 2000). This design staggered the baseline and intervention across participants. A staggered intervention allowed the experimenter to measure the presence of a functional relationship between the independent and dependent variables

without withdrawing effective treatment (Cooper et al., 2020). All participants started under baseline conditions together, and the intervention was introduced first to Participant 1, then Participant 2 was added, and then Participant 3. Behavior changes across phases of the study were displayed together on one graph, with each participant's graph stacked on top of the previous one. That way, participants' behavior changes could more clearly demonstrate any functional relationship between variables. The experimenter chose this design due to its ability to isolate an intervention's effects. This design was also more appropriate than a multiple baseline across settings design because the study took place in only one type of setting, the home setting. Also, a reversal design would have been counterproductive when attempting to teach skills that participants will maintain in the future (Cooper et al., 2020).

There were three phases for this study: baseline, intervention, and maintenance. During the baseline phase, the experimenter observed each parent participant using a behavior contract with their child. The experimenter observed each parent in their home during 30-minute observation periods. The experimenter calculated an adherence score based upon the percentage of steps in the task analysis that a parent completed correctly. During this phase, the experimenter did not implement a behavior contract for the parent's behavior. Baseline observations continued for a minimum of three sessions or until the data were stable or trending away from the hypothesized direction.

During the intervention phase, the first parent participant to demonstrate steady-state responding, reflected in a stable adherence score, received the intervention first. The experimenter applied the intervention (i.e., a behavior contract written for the parent participant's behavior and a reinforcer for that behavior) during this phase. Participant 1 continued to receive the intervention while the other two participants remained under

baseline conditions for a minimum of three additional sessions. The experimenter then selected one of the two remaining participants with the most stable adherence score to be Participant 2. Then Participant 1 and Participant 2 received the intervention for a minimum of three sessions while the third participant remained under baseline conditions. Next, Participant 3 received the intervention, resulting in all three participants receiving the intervention simultaneously for three more sessions.

The third phase of the study was the start of the maintenance condition. The experimenter conducted a maintenance probe 7 days after the end of the intervention phase. The experimenter scheduled a probe observation for each participant during the week, beginning 7 days after the intervention. The experimenter observed the participant perform the behavior contract at home with their child and noted the adherence score. The maintenance phase illuminated the extent to which parents continued to implement a behavior contract for their child's behavior once the contract to address the parent's behavior was no longer in place.

Dependent Variables. This study measured three dependent variables. The primary dependent variable was parental adherence to treatment to all the recommended steps provided to them on the Competency Checklist. This dependent variable involved how the parent administered the child's behavior contract as broken down into steps based on the Competency Checklist. The experimenter observed the participant using the behavior contract with their child and used the checklist to determine which steps were completed as prescribed. An adherence score was expressed as a percentage and was determined by dividing the number of steps completed by a participant by the total number of steps in the rubric.

Two additional social validity variables were also included in this study. These

included parent perceptions of how effective their use of a behavior contract was in reducing their child's noncompliance and associated problem behaviors and how easy it was to use a behavior contract with the support of the reinforcement program for them. The two social validity variables were measured using a questionnaire administered to parents after all other data collection was complete.

Baseline Condition. The baseline condition took place in the homes of the participants. All three participants entered the baseline phase of the study simultaneously. During the baseline condition, this researcher, a Board Certified Behavior Analyst, observed the parent participants implement a behavior contract that they each created with their child. The experimenter used the Competency Checklist to calculate a participant's adherence score. The experimenter sat a few feet away from the parent and child, close enough to hear the conversation. The experimenter avoided interaction with the participant and their child.

Behavior Contract. This study's intervention consisted of a behavior contract to target parental behavior. This phase started for the first participant once a stable pattern of responding was observed for that participant during baseline conditions for three sessions. The session began with an observation of a parent using a behavior contract with their child and a researcher assessing an adherence score. Like the baseline condition, the experimenter interacted with the participant and their child as little as possible during the assessment.

Immediately following the adherence assessment, Participant 1 met with an experimenter in their home in the living room. For two participants who had more than one child, siblings were asked to go to another location to create a space relatively free of distractions. The researcher gave the participant the checklist consisting of all the steps

recommended in using a behavior contract. Next, the researcher collaborated with the parent to create a contract with specific objectives for the parent's behavior. The objectives were based on the participant's baseline from the researcher's observation using a Competency Checklist that the parent did not engage in. Both a short- and long-term objective were specified. The short-term objective involved the parent engaging in one more step than they used in the previous observation. The long-term objective involved the parent meeting a minimum of 90% of the checklist unprompted for a minimum of three consecutive observations.

Reinforcers were identified to strengthen parent behaviors; some examples included a special drink at Starbucks, a special dessert, or a set amount of time playing video games. The researcher provided a long-term reinforcer of a \$5 Amazon gift card for meeting the objectives on the parental behavior contract during an observation. The researcher described the reinforcers identified for short-term and long-term objectives, describing the steps in the task analysis that the caregiver must implement to earn each reinforcer. Next, the caregiver was asked to restate the objective and the reinforcer that can be earned for meeting the objectives.

During the meeting, the researcher purposely ignored inconsequential, not recommended behavior of the caregiver (e.g., complaining about the child's behavior, the intervention, or any critical remarks). The researcher did make one brief empathetic statement such as, "I understand it can be frustrating when you find yourself repeating instructions to your child." Both the caregiver and the researcher signed the contract indicating each person's intent to comply with the agreement.

The next session started with the participant conducting a new behavior contract meeting with their child, and a researcher using the Competency Checklist to assess the

participant's use of the behavior contract expressed in an adherence score. Once again, the experimenter interacted with the participant and their child as little as possible during the assessment. Next, an experimenter provided feedback on the participant's correct use of the tool by pointing out each step performed correctly and providing enthusiastic verbal praise. Then, the experimenter asked the participant what they could do differently regarding steps not completed correctly. Procedures were then reviewed and modeled for them. The experimenter provided the reinforcer designated to be earned if an objective was met. Next the experimenter reviewed the behavior contract with the participant and emphasized the objective that must be met to earn the reinforcer. The objective involved the participant engaging in one more step than in the previous session unprompted.

The behavior contract was implemented for Participant 2 once Participant 1 demonstrated consistency in responding for three consecutive sessions. Likewise, the behavior contract was implemented for Participant 3 once Participant 2 demonstrated consistency in responding for three consecutive sessions. Monitoring of program implementation took place at the start of each in-home session for the remainder of the experiment. The checklist was reviewed, and the participant's behavior contract was reviewed in terms of the number of steps performed unprompted to earn a reinforcer.

Reinforcers. A \$5 Amazon gift card was provided to the subject by the researcher, if earned, for each meeting in which a participant satisfied the objective on their parental behavior contract for that session. Parent participants were asked to identify a reinforcer that they would provide to themselves that they could earn for meeting the long-term objective. Parents were encouraged to include family members in identifying reinforcers. This could involve a purchase made with Amazon gift cards or a special outing.

Data Collection Procedures

Data were collected in the present study on treatment adherence as well as social validity. Interobserver agreement data (IOA) was also collected.

Training Data Observers. Two observers were trained to collect data on the dependent variable to 80% reliability before the present project began, as follows. The experimenter provided written instructions to the observers describing how to score the use of a behavior contract using the checklist. The experimenter reviewed each step in the checklist with the observers. Next, the experimenter modeled the use of a behavior contract with an observer acting like a child. The experimenter modeled the use of the tool correctly and modeled an example of incorrect usage of a behavior contract. Observers were asked to identify the steps not implemented correctly. Next, an observer acted out the use of the checklist with the experimenter acting like a child. During this time, the other observer used the checklist to score the adherence to the use of a behavior contract. The experimenter also calculated an adherence score for the observer. The experimenter asked the observer to explain any step not implemented correctly.

Treatment Adherence Data. During the first two phases of the study, baseline and intervention, a trained observer recorded a participant's adherence to the treatment protocol at the beginning of sessions conducted at participants' homes while the participant was implementing a behavior contract with their child. A researcher measured adherence using the Competency Checklist. A trained observer calculated an adherence score by checking off each step on the checklist they observed the participant to use as they implemented a behavior contract meeting with their child. Each step followed was divided by the total number of steps in the checklist.

Social Validity Data. The experimenter provided the Parent Perceptions

Questionnaire to all three participants in this study. This questionnaire was provided to each participant in their home to fill out on the day it was provided. The researcher collected the completed questionnaire on the same day.

Interobserver Agreement (IOA). During 33% of sessions for each phase of the study, the caregiver's interactions with the child were scored by the two trained independent observers. One observer was a Board Certified Behavior Analyst, and the second was a Registered Behavior Technician. When more than one observer was present to calculate IOA, the two observers were separated by a minimum of 4 feet to ensure independent scoring to avoid a threat to internal validity. A percentage of agreement on the number of steps of the competency checklist the participant engaged in was calculated for each session by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. Overall, agreement of 80 % or greater for a particular phase of the study was considered acceptable.

Data Analysis Procedures

Data collected on the dependent variable were analyzed across all phases of the study to determine if there was a functional relationship between the independent variable and the dependent variable. Data collected were displayed graphically to identify functional relationships as well as to identify contingency variables. Line graphs were used to illustrate the progress of dependent variables across study phases. Data points indicated the percentage of a dependent variable. The experimenter analyzed the graphs using visual inspection and interpreted the data to determine the effectiveness of the intervention (Cooper et al., 2020). The presence of a functional relationship between the independent variable and dependent variable was analyzed by determining if the dependent variable increased after the independent variable was introduced and not

before. That is, the first behavior increased once it had been specified on a behavior contract written for the participant, with a reinforcer delivered upon its occurrence, and the other behaviors of the participant which had not been exposed to this treatment remained at baseline levels.

The experimenter utilized the Percentage of Nonoverlapping Data (PND) measure (Tarlow & Penland, 2016) to analyze the percentage of data points during each intervention phase of the study that overlapped with the preceding baseline phase of the study. The experimenter considered any intervention phase with a PND > 75% to be indicative of a functional relationship between the independent variable and dependent variable (Scruggs & Mastropieri, 2013). The experimenter tallied the answers to the social Parent Perceptions Questionnaire. The experimenter compared the answers of each participant to other participants' answers and also averaged responses to questions in order to ascertain if the intervention is acceptable to parents and if it was an intervention they would use again.

Chapter 4: Results

Introduction

The purpose of this dissertation research was to investigate the impact of using behavior contracts specifically targeting parental behavior and providing reinforcing consequences for the parent's behavior on parental adherence in implementing behavior contracts to address child behavior problems. Parents used identical procedures to implement behavior contracts with their children to address their child's problem behavior that involved not following commands. A secondary purpose of this study was to determine parents' perceptions about the impact their use of behavior contracts had on their children's behavior. Three research questions were addressed in this dissertation:

1. How will targeting caregiver behavior and identifying reinforcers for the behavior of caregivers affect caregivers' implementation of behavior contracts for their child's behavior?

2. What will parent perceptions be about the impact of their use of a behavior contract on their child's behavior?

3. How do parents perceive the ease of implementing behavior contracts to improve their child's behavior with the intervention of a contract of their own behavior for treatment fidelity?

Demographic Characteristics

The participants in this study were three parents referred to a behavior analysis agency in Miami, Florida, owned by this researcher to obtain services for a child engaging in problem behaviors associated with noncompliance. All three parents were married, and two of the three parents were married to the biological spouse of the child for whom services were sought. Participants included two mothers and one father. One

mother was Cuban American and was born in the United States. The second mother was born in Peru. Her first language was Spanish, and she informed the researcher that her husband's first language was Portuguese. One father identified as American and listed that he spoke only English. All three children identified by the participants were born in the United States. All three participants had a child referred for noncompliance whose ages were 8, 12, and 13 years.

Data Analysis

Data were collected on potential participants' children to determine if they qualified for the study. Once participants were identified, data were collected during a baseline phase. The multiple-baseline across-participants design enabled the investigator to examine the effects of using behavior contracts on parents' behavior in implementing a similar intervention with their own child. In line with single-subject research design quality standards, this investigator systematically measured outcome data pertaining to Research Question 1 and graphically displayed data for visual analysis to analyze the effectiveness of behavior contracts on caregiver behavior. A PND was also calculated to determine the percentage of intervention sessions in which each participant's behavior improved. A parent perceptions questionnaire addressed Research Questions 2 and 3 to assess social validity.

Participant Selection

An initial step in this study involved recruiting participants. It was necessary to recruit parents whose child engaged in a high frequency of problem behaviors in response to their demands, as using a behavior contract would be most appropriate for these parents. The first three potential participants each identified one child and began the 7-day data collection simultaneously. However, none of them completed days of data

collection. At that point, one potential participant decided not to continue to participate. A new potential participant was selected. This potential participant met with the researcher in the office. The consent form was reviewed and then signed by the parent. All three potential participants began data collection on the same day (one for the first time and the other two restarting data collection). During this second attempt, the researcher sent reminders three times during the week via text message. On two occasions, a potential participant responded to the text message by calling the experimenter and asking questions about how to fill out the datasheet. All three participants completed the 7-day data collection.

Data Used to Qualify for the Study

All three potential participants qualified for the study based on their child having engaged in a minimum of 20 problem behaviors per day after not following a directive. Table 1 summarizes the data the three parent participants collected for a 7-day period on their child's behavior using a noncompliance and associated problem behaviors data sheet.

Table 1

Participant Qualification Frequency Data

Participant	Frequency of noncompliance	Average frequency/day	No. associated behaviors	Average no. associated PB/day
1	47	6.7	41	20.14
2	69	9.8	181	26.00
3	108	15.4	216	30.90

Note. PB = Problem behavior. Frequency data collected on problem behaviors of each participant's child.

Participant 1 reported that their child did not follow demands an average of 6.7 times per day. Participant 2 reported that their child did not follow 9.8 requests per day

on average. Participant 2 reported an average daily frequency of 26 problem behaviors their child engaged in that followed parent requests. Participant 3 observed the highest frequency of problem behaviors for their child. They reported a daily average of 15.4 requests that were not followed by their child and an average of 30.9 problem behaviors that followed parent requests.

Participant 1's child most frequently engaged in arguing; almost 100% of requests resulted in arguing. Often, arguing included other problem behaviors or escalated to other problem behaviors. Sometimes a request would start with ignoring, but repeated attempts from the parent would result in changing the subject or gestures such as eye rolling or sighing loudly. Although relatively infrequent, verbal aggression was a more serious concern, according to Participant 1, who indicated that this behavior was hurtful. She said, "She really knows what to say to hurt my feelings."

For Participant 2's child, the most frequent problem behaviors associated with parent requests were not responding to a parent's request that involved not looking at the parent as they are speaking and failing to initiate the task, making negative statements, and fleeing the area or crawling under the table, respectively. During most recorded incidents, Participant 2's child initially did not respond to those requests. Participant 2 stated that it looked as though he did not hear the request. In this type of instance, Participant 2's child did not make eye contact and did not respond to the request. Continued attempts by Participant 2 to have their request acknowledged reliably led to other behaviors, such as fleeing the area.

For Participant 3, the three most frequent behaviors were verbal aggression, negative statements, and gestures. Although it only occurred once, self-injurious behavior was concerning to Participant 3. This took the form of Participant 3's child slapping his

own face and scratching his arm. However, no injury resulted from this behavior. Property destruction was also infrequent but concerning to Participant 3 during the qualifying data collection period. Participant 3's child threw a photographic book that was important to his father across the room. On another occasion, he dented the wall by kicking it repeatedly. Both Participant 2 and Participant 3's children engaged in some physical aggression in the form of shoving, slapping, or throwing something at a person. No physical harm was caused by physical aggression.

Research Question 1

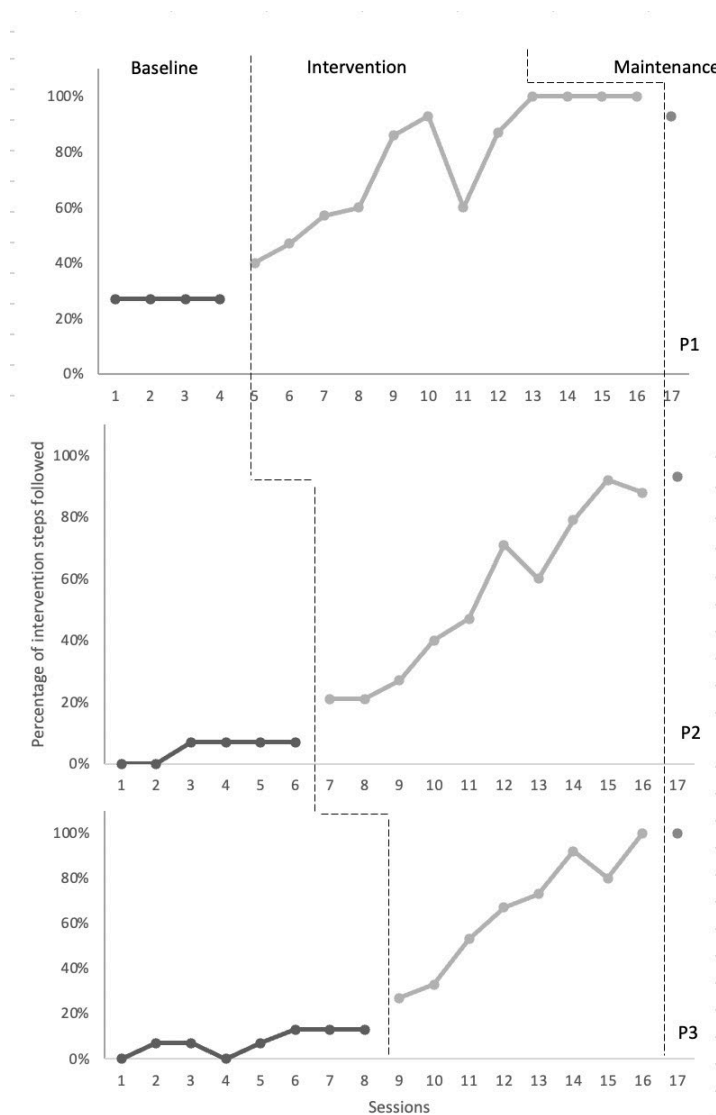
Data presented in the Figure respond to Research Question 1, which asked how targeting caregiver behavior and identifying reinforcers for the behavior of caregivers affect caregivers' implementation of behavior contracts for their child's behavior.

Baseline Phase

The Figure shows baseline data collected on each participant's use of a behavior contract to reduce their child's problem behavior prior to the intervention. Baseline data were compared to intervention sessions in a staggered presentation across participants to answer the question of whether using a behavior contract addressing parent behavior and identifying reinforcers for the behavior of caregivers affects caregivers' implementation of behavior contracts for their child's behavior. Each score represents the percentage of the steps in the intervention that were performed by the parent. There are 16 steps outlined in the checklist that the parent participants used to administer a behavior contract. An adherence score was expressed as a percentage and was determined by dividing the number of steps completed by a participant by the total number of steps in the rubric. The adherence scores for each participant were averaged for the baseline and intervention phases of the study, as shown in Table 2.

Figure

Graphic Display of Participant Data



Note. Graph depicting results for Participants 1, 2, and 3 (P1, P2, and P3 respectively). Data are reported as a percentage of steps completed during the baseline, intervention, and maintenance phases.

As shown in the Figure, all participants entered the baseline phase simultaneously. During the baseline phase, the experimenter observed each parent participant using a behavior contract with their child. The experimenter observed each parent in their home during 30-minute observation periods. The experimenter calculated an adherence score based on the percentage of steps in the task analysis that a parent

completed correctly.

Table 2

Average Adherence Scores by Percentage for Baseline and Intervention

Item	Participant 1	Participant 2	Participant 3
Average baseline adherence score	27.0	3.5	7.5
Average intervention adherence score	77.5	55.2	65.6
PND	0.0	0.0	0.0
% improvement	73.0	84.5	92.5

Note. PND = Percentage of nonoverlapping data.

Participant 1 entered the intervention phase first. Participant 1 remained under baseline conditions for four sessions. Participant 1 engaged in the same four steps out of a total of 15 steps in the task analysis on all 4 days for an average adherence score of 27%. The next participant to enter the intervention, Participant 2, remained under baseline conditions for a total of six sessions. Participant 2 alternated between completing zero and 7% of the steps in the task analysis. This means that Participant 2 completed none of the steps as prescribed in the task analysis during the first two baseline sessions and completed one of the 15 steps, with a 7% adherence score, during the next 3 baseline sessions. Participant 2 did not complete any steps in the task analysis during the sixth and final baseline session. Participant 2's average adherence score during baseline was 3.5%. Remaining under baseline conditions the longest, eight sessions in total, Participant 3's data were more variable than the data of the other two participants.

The baseline consisted of eight sessions for Participant 3. During the first session and again in session number four, Participant 3 did not complete any of the 16 applicable

steps in the task analysis, resulting in an adherence score of 0%. During Baseline Sessions 2, 3, and 5, Participant 3 engaged in one out of 16 steps (7%) in the task analysis. During Sessions 6, 7, and 8, Participant 3 completed two out of 16 steps in the task analysis for an adherence score of 13%. These steps included the step completed previously and another step. The average adherence score for these eight baseline sessions is 7.5%, meaning that, on average, Participant 3 engaged in 7.5% of the steps of the task analysis for using a behavior contract.

Intervention

The data collected during the intervention phase most directly addressed the question of whether targeting caregiver behavior and identifying reinforcers for the behavior of caregivers improves caregivers' adherence to procedures for implementing a behavior contract intervention to improve their child's behavior. Participant 1 entered the intervention phase in Session 5 and remained in the intervention phase for 12 sessions in total. In Session 5, Participant 1's adherence score was 40%. This meant that Participant 1 engaged in six out of 15 possible steps in the task analysis. This was a 13% increase over the baseline. Participant 1 had an average adherence score of 75.5% during the intervention phase. This means that, when averaging all intervention sessions together, 75% of all the steps of the task analysis were completed. A 73% increase was observed from the baseline average to the last intervention session. The last four sessions had a score of 100%. This means that the participant completed all steps of the rubric correctly. The PND was 0% for the intervention phase. This means that there were no sessions during the intervention phase in which Participant 1 scored as low as they had during any of the baseline sessions.

The intervention phase lasted 10 sessions for Participant 2. Participant 2 entered

the intervention phase in Session 7. During the first intervention session, there was a 17.5% increase in the number of steps in the task analysis that Participant 2 performed. A 92% adherence score was observed in Session 15, reflecting 12 steps completed out of a possible 13 steps. During session number 16, Participant 2 scored an 88% adherence score, reflecting that 88% of the task analysis was completed. The PND was 0% for Participant 2 during the intervention phase. Participant 3 entered the intervention phase in session 9. Participant 3 remained in the intervention phase for eight sessions. Participant 3 increased their adherence score by 14% on the first intervention session. Participant 3 progressed to 100% adherence within eight sessions. Participant 3 had an average adherence score of 65.6% during the intervention phase, with a PND of 0%.

Maintenance

Extending the research to answer Research Question 1 to determine the impact of using a behavior contract for parent behavior, a maintenance probe was conducted 1 week after the intervention phase concluded. The maintenance probe was conducted for each subject on session number 17 and consisted of only one session for each participant. Participant 1 and Participant 2 both completed 93% of the task analysis steps during the maintenance probe. A 100% adherence score was observed for Participant 3, reflecting that Participant 3 completed all steps in the task analysis as prescribed. For P1, this was a decreased adherence score, as she had scored 100% during the previous four sessions. The maintenance probe score of 93% was an increase for Participant 2, who had scored 88% in session number 16. Participant 3's score of 100% was maintained from Session 16.

Interobserver Agreement

To ensure the reliability of the data being collected, the two trained independent

observers scored each caregiver's interactions with their child during 40% of baseline sessions across participants. Following a period of training for observers in observational methods for this study, IOA was recorded (see Table 3). When more than one observer was present to calculate IOA, the two observers were separated by a minimum of 4 feet to ensure independent scoring to avoid the threat to internal validity. One of the observers was the researcher, a Board Certified Behavior Analyst, and the second observer was a Registered Behavior Technician. This was necessary to ensure that data were being collected as intended and to know when retraining was necessary.

Table 3

Interobserver Agreement Data

Item	Participant 1	Participant 2	Participant 3
No. baseline sessions	4	6	7
% baseline sessions reviewed	50	33	38
IOA	87	84	80
No. intervention sessions	12	9	7
% intervention sessions reviewed	33	33	43
IOA	89	94	81
PND	0	0	0

Note. IOA = Interobserver agreement. PND = Percentage of nonoverlapping data.

Table 3 describes the percentage of sessions reviewed and the percent agreement of observers' data recorded. Percentage of agreement was calculated for each session by dividing the total number of agreements by the total number of agreements plus disagreements multiplied by 100. An overall agreement of 80% or greater for a minimum

of 33% of sessions was acceptable. As shown in Table 3, the average IOA across all participants during baseline was 84%. During the intervention phase, IOA was conducted during 36% of sessions. The average IOA during intervention was 88%.

The IOA data were collected for Participant 1 during 50% of baseline observations. The data collection took place during Sessions 3 and 4. The IOA was calculated to be 80 and 93%, respectively, for an average IOA of 86.5%. During the intervention phase, two observers collected data during four out of the 12 intervention sessions. IOA was calculated to be 81%, 88%, 88%, and 100%, respectively. The average IOA during the intervention phase for Participant 1 was 89.5%. No IOA was calculated during the maintenance probe.

The IOA data were calculated for Participant 2 during 33% of baseline sessions. These observations were made during Sessions 2 and 4 and were calculated to be 80% and 87%, respectively. This is an average of 84%. During the intervention phase, IOA was collected during Sessions 7, 10, and 14 and calculated as 87%, 94%, and 100% respectively. This is a 94% IOA. The IOA data were calculated for Participant 3 during 38% of baseline sessions during Sessions 2, 4, and 6. The IOA was 75%, 80%, and 86%, respectively, for an average IOA of 80%. During the intervention phase, 43% of sessions contained a calculation of IOA. These sessions occurred during Sessions 11, 12, and 13, and IOA was 80%, 80%, and 87%, respectively, for an average IOA of 82%.

Research Question 2

To answer research questions about the participants' perceptions of the intervention, the researcher met with each participant in their homes after completing the maintenance probe and presented the Parent Perceptions Questionnaire. This 10-item measure was implemented to address Research Questions 2 and 3. The questionnaire

sought to answer Research Question 2 and determine what parents' perceptions were about the impact of their use of a behavior contract on their child's behavior. This questionnaire was also designed to determine how parent participants perceived the ease of implementation of behavior contracts to improve their child's behavior improved with the intervention of a contract for their own for their behavior (see Table 4).

Table 4

Summary of Participant Responses to Questionnaire

Item	Participant		
	1	2	3
1. Behavior contracts are useful tools for improving child behavior.	5	5	5
2. Behavior contracts are useful tools for parent behavior.	4	5	5
3. I could easily implement a behavior contract on my own.	5	4	5
4. I am happy with my child's progress after using a behavior contract.	4	5	5
5. My child will benefit from continued use of a behavior contract.	5	5	5
6. My ability to use a behavior contract improved when a contract was made for my behavior.	5	5	5
7. I would benefit from continued use of a behavior contract for my behavior.	4	5	5
8. Using a behavior contract for my behavior did not improve my ability to use a contract effectively.	1	1	1
9. I am likely to use a behavior contract for my behavior in the future.	3	5	5
10. I would recommend this intervention to other parents struggling with their child's noncompliance.	5	5	5

Note. 5 = Strongly agree. 4 = Agree. 3 = Neutral. 2 = Disagree. 1 = Strongly disagree.

The researcher briefly explained how to fill out the questionnaire and the rating scale. The researcher was seated a minimum of 6 feet away from the participants as they filled out their form. A Registered Behavior Technician assisted one parent by translating

the questions into Spanish. In response to each statement, a participant was asked to rate on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) how much they agreed with each statement. Research Question 2 addressed the parents' perceptions about the impact of using a behavior contract on their child's behavior. Three questions on the Parent Perceptions Questionnaire most directly answered this question. All three participants strongly agreed with Statement 1 (Behavior contracts are useful tools for improving child behavior). All three participants also strongly agreed with Statement 5 (My child will benefit from continued use of a behavior contract). There was some disagreement with the fourth statement (I am happy with my child's progress after using a behavior contract). Participants 2 and 3 strongly agreed, but Participant 1 did not indicate strong agreement with this statement.

Research Question 3

Seven questions on the questionnaire were designed to answer Research Question 3, which asked how parents perceived the ease of implementing behavior contracts to improve their child's behavior with the intervention of a contract of their own behavior for treatment fidelity. Of the seven questions, all three participants answered identically to five of them. All three participants strongly agreed that their ability to use a behavior contract improved when a contract was made for their behavior. Conversely, all three participants strongly disagreed with Statement 8 (Using a behavior contract for my behavior did not improve my ability to use a contract effectively). All three participants indicated that they would recommend this intervention to other parents struggling with their child's noncompliance.

Participants responded differently to four questions used to answer Research Question 3. In response to Statement 2 (Behavior contracts are useful tools for parent

behavior), Participants 2 strongly agreed. However, Participant 1 did not indicate strong agreement. Participants 1 and 3 strongly agreed with Statement 3 (I could easily implement a behavior contract on my own), but Participant 2 did not strongly agree. Participants 2 and 3 strongly agreed with Statement 7 (I would benefit from continued use of a behavior contract for my behavior). Participants 2 and 3 strongly agreed with Statement 9 (I am likely to use a behavior contract for my behavior in the future), and Participant 1 indicated that she was neutral with this statement.

Summary

The results of the present study provide evidence to support the use of behavior contracts to target and reinforce parent behavior that can help them use behavior contracts more effectively to improve their children's behavior. All three participants increased the percentage of steps in a task analysis for using a behavior contract they completed as prescribed. They demonstrated this change in performance only once the intervention was implemented and not before. Two participants reached 100% adherence in implementing the task analysis for implementing a behavior contract for their child's behavior, and another participant reached 93% of the steps in the task analysis. All three participants learned to complete new steps in the task analysis each time steps were formally added to their contract, and reinforcers were scheduled to be delivered upon meeting the specified objective. The total number of sessions in the intervention condition ranged from eight to 12. A week after the behavior contract intervention, all of the participants maintained scores that were significantly higher compared to baseline levels.

The Parent Perceptions Questionnaire revealed that all three participants believed that behavior contracts were useful tools to improve child behavior. Likewise, all three

participants strongly agreed that behavior contracts were useful tools to improve parent behavior and that their ability to use a behavior contract improved when a behavior contract was in place for their behavior. Two of three participants strongly agreed that they would continue to use a behavior contract for their behavior, and one expressed a neutral feeling about this.

Chapter 5: Discussion

Although existing evidence shows that behavior contracts are effective tools for reducing child behavior problems (Mruzek et al., 2007), this technology is of little value if behavior contracts are not implemented consistently or as prescribed. The present study sought to address the problem of limited fidelity by using behavior contracts for parents to improve their adherence. The purpose of the present research was to investigate if creating behavior contracts specifically targeting parents' behavior and providing reinforcers to maintain that behavior would increase parental adherence. Three research questions guided this study. The first research question asked if using behavior contracts to target parent behavior resulted in an improvement in parents' implementation of behavior contracts for their child's behavior. Research Question 2 asked if parents perceived that their use of child behavior contracts improved their child's behavior. The third research question asked if parents perceived a benefit to having a behavior contract to target their own behavior while implementing a similar contract for their child's behavior.

In response to the first research question, findings showed that, for all three participants, parental use of a behavior contract for their own behavior resulted in a marked increase in their adherence during the treatment phase. For Research Question 2, findings showed that parents perceived an improvement in their children's behavior. For Research Question 3, all three parent participants strongly agreed that their ability to use a behavior contract improved when a behavior contract was made for their own behavior. Taken together, these findings are encouraging and suggest that parents see a value in using behavior contracts—both for their children's behavior and their own.

Previous research has shown that using behavior contracts can improve children's

behavior (Allen & Warzak, 2000; Mruzek et al., 2007). The contracts also function to increase and maintain adaptive behaviors meant to replace problem behaviors (Allen & Warzak, 2000; Stover et al., 2008). Some studies provided parent training to teach parents to implement behavioral interventions (Artman-Meeker et al., 2015; DeGarmo et al., 2004; Ingersoll & Dvortcsak, 2006; Lane et al., 2016; Lovaas et al., 1973; Sibley et al., 2013). However, that research was almost exclusively focused on the benefits of using behavior contracts with children to improve their behavior.

Two intervention studies were unique in their focus on parent behaviors: Carroll et al. (2011) and Forehand et al. (1979). However, reinforcers contingent on the parent's behavior were not provided in either study. Also, these studies did not focus on adherence or use the same procedures for parents' and children's behavior. The present study extends that research to show how incorporating reinforcers in a parent's behavior contract can also improve their implementation of behavior contracts for their children's behavior.

Interpretation of Findings

The present research values parents as implementers; it was rooted in the idea that if behavior contracts are to be truly useful tools to reduce child behavior problems, then they must be successful in children's homes and need to be designed in a way that parents can successfully implement them. Behavior analysis interventions are often effective in the clinical setting; however, in applied settings, such as homes, they can prove less effective as they are often not implemented as prescribed and, sometimes, not at all (DeGarmo et al., 2004; Patterson, 1976). For this reason, gains made in a clinic may not generalize to the home setting or may not maintain when a therapist is no longer overseeing the program (Kazdin & Wassell, 2000; Lane et al., 2016; Lovaas et al., 1973).

Even when caregivers learn to implement procedural steps, they may fail to do so consistently (MacNaughton & Rodrigue, 2001). This lack of fidelity can sabotage a program's success, and the children's behavior may not improve or may even regress after the conclusion of the intervention.

To address this, the current project focused on the parents' important role in the ultimate success of an intervention. By bringing parents more effectively into the process, this intervention strengthens the partnership between the therapist and the parent, respecting and valuing parents' contributions to successful implementation. Extensive training programs for parental adherence have been attempted (Patterson & Chamberlain, 1988; Sibley et al., 2014), but these programs did not utilize the behavior contract concept with the parents' adherence behavior.

Research has shown that breaking down tasks into smaller behaviors can help children to follow objectives (Chagolla, 2020; Crosland et al., 2008). The present study models part of the process described by Van Camp et al. (2003) for children's behavior contracts. They broke down the process of using a behavior contract into individual steps. In the present study, that important work was further extended in that it used the same type of behavior contracts for parents' behavior as the parents themselves were using to improve their children's behavior. The present study found that parents were better able to follow a lengthy and involved implementation process using existing contract steps when they were also following a parental behavior contract.

A benefit of the research design used in this study (i.e., multiple baseline across subjects) is that it strengthened the internal validity of the results. The design staggered the times when participants entered the experimental condition after baseline, with participants remaining in baseline conditions for varying amounts of time. The three

participants' behavior changed when each moved into the experimental condition but not before. The participants who remained in baseline had been given the appropriate steps to follow, but they continued to demonstrate nonadherence to those procedures.

Additionally, all three parent participants increased their adherence score incrementally as new steps were formally added to their contract. The 100% PND for all three participants further confirms that the change in adherence can be attributed to the parent behavior contract. Thus, behavior changes in the experimental condition could be directly attributed to the intervention.

This study also took place entirely in individual participants' homes. Therefore, the likelihood that results could be an artifact of participants observing other participants was eliminated as participants did not have access to each other, other than having been told that other participants were involved in the study. It is important to note that participant adherence scores increased incrementally during the intervention phase. This mirrors findings by Crosland et al. (2008) and reflects the procedure of adding new goals to each participant's contract as previous goals were met. While the overall adherence score reflects all the goals in the intervention, the session-to-session increases followed the stepwise addition of new goals to a participant's contract. Participants generally did not follow an intervention step until it was formally added to their contract. At that time, they also received repeated direct instruction and roleplayed the step with the researcher, as had been done in previous studies (e.g., Sibley et al., 2014).

Previous research demonstrated the importance of identifying strong reinforcers to motivate child behavior. Majdalany et al. (2017) successfully used behavior contracts in which children could earn time with a cell phone contingent on compliance. Similarly, Wilder et al. (2007) allowed children to earn coupons that could be exchanged for time

with a preferred item. In the present study, however, reinforcers were designated for parents' behavior with similar results. Thus, directly reinforcing specific session goals led to incremental improvement in overall adherence scores.

Following the intervention phase, there was a week without a session followed by a maintenance probe. During the maintenance probe, no updated behavior contract was written for the participants. Overall, all of the participants maintained scores during the maintenance probe that were dramatically higher than those observed during the baseline phase. This means that between 1 and 2 weeks after the intervention, all participants' scores remained higher than they did before the intervention. All three participants received very similar scores on the maintenance probe to those observed during their last intervention session. Of the three participants, one participant's score (Participant 1) decreased slightly from the last intervention session, one improved slightly (Participant 2), and one remained the same (Participant 3). This finding suggests short-term maintenance of behavioral gains.

Participant 2 was the only participant who scored higher during the maintenance probe than during any other study session. She informed the researcher that although no contract was made for her during the past week, she made a contract for herself. She informed me that she looked for a step that she had missed and added it to her contract. Additionally, she provided a reinforcer when she met her goal. This suggests that Participant 2 had made a habit of using a behavior contract and saw value in continuing it. Participant 3, having scored 100% during the last intervention session, maintained his 100% score during the maintenance probe when no behavior contract was in place for his behavior. He stated that he did not formally use a contract but rehearsed using all the steps as he did not want to lose his score.

Regarding the remaining two research questions, the Parent Perceptions Questionnaire revealed that the three parents who were the participants in this study perceived behavior contracts to be useful tools to improve their child's behavior (Research Question 2) and that the behavior contract that addressed their own behavior was of value to them (Research Question 3). Similar to studies that found behavior contracts to help reduce problem behaviors of children (Mruzek et al., 2007), all three participants indicated that they felt strongly that behavior contracts were useful tools to improve child behavior. This is important because if parents do not perceive behavior contracts as useful tools to improve their child's behavior, then they may not be motivated to work on the way they implement such contracts.

All three participants also strongly agreed with the following statement: My child will benefit from continued use of a behavior contract. So not only did they find behavior contracts to change their child's behavior successfully, but all three participants also felt strongly that their children would continue to need this intervention. There was some disagreement with a third statement that they were happy with their child's progress after using a behavior contract. Participants 2 and 3 strongly agreed, but Participant 1 put a 4 to indicate agreement but not strong agreement with this statement. Throughout the course of treatment and after, Participant 2 and Participant 3 both anecdotally expressed a great deal of enthusiasm for how well their children were behaving. Participant 2 shared that she had expected some improvement but was surprised at how well her son did when she used the behavior contract. Participant 3 stated he did not know his son could act this well, admitting that he had underestimated him.

Research Question 3 addressed parent perceptions of the intervention at the heart of this study, asking if they saw value in making behavior contracts to address their own

behavior rather than the usual approach of only writing behavior contracts for the child's behavior. Of the 10 statements contained in the Parent Perceptions Questionnaire, seven of them addressed Research Question 3, as all seven were statements about the parents' perception of how having a behavior contract addressing the parents' behavior assisted them in implementing similar contracts with their children. In essence, agreement with these seven statements reflected a perception that the present intervention of using contracts for parent behavior was useful. In contrast, disagreement with these statements would reflect the sentiment that behavior contracts for child behavior were enough, negating the need for this intervention. Overall, the parents agreed with these statements but showed a greater degree of agreement with some of the statements than with others.

There were three statements that all three participants strongly agreed with. They strongly agreed that having a behavior contract for their behavior improved their ability to use behavior contracts for their child's behavior. All strongly disagreed with a converse statement, verifying their confidence in this intervention. Therefore, all participants felt strongly that this intervention was worthwhile. Additionally, all three participants indicated that they would recommend this intervention to other parents struggling with their child's noncompliance. Two participants mentioned that they had already reached out to friends and family members to recommend this intervention for them.

However, some questions did not reflect a perfect agreement. Research shows that behavior contracts encourage participants to self-monitor their goals to enhance outcomes (Alessandri et al., 2020; Chagolla, 2020; Connell et al., 1993; McKenna, 2020). Questions that asked parents if they could use this intervention independently did not have perfect agreement among participants. Participant 1 and Participant 3 strongly

agreed that they could easily implement a behavior contract on their own. Participant 2 agreed with this statement but did not strongly agree. Participant 1 remarked to the researcher that after the intervention, she would not need more assistance. Participant 1 indicated an agreement, but not a strong agreement, regarding a statement indicating that she would likely continue to use a behavior contract for her own behavior. She commented that it might not be necessary but said that if she struggles with consistency in the future, she will use it again. Unlike Participant 1, Participant 2 and Participant 3 strongly agreed that they would benefit from continued use of a behavior contract for their behavior. Participant 2 indicated that she felt more confident in her ability to implement a behavior contract now but could still use more assistance. Participant 3 stated that he knows how to implement a behavior contract properly but felt unsure if he will remain consistent, as knowing someone was coming to test him kept him on his toes. Participants 2 and 3 strongly agreed that they are likely to use a behavior contract for their own behavior in the future. Participant 3 commented that he hopes he can remain consistent with this. Participant 1 marked 3 to indicate that she was neutral with this statement, confirming her feeling that although the intervention was helpful, it will not be necessary to continue it. She said she learned some useful skills and does not think she will forget them.

Implications of Findings

The results of this study have implications within the field of applied behavior analysis for therapists working with parents struggling with their child's behavior. It is common for behavior analysts to have parents create behavior contracts to improve their children's behavior. (Chagolla, 2020; Crosland et al., 2008, Locke & Latham, 2002; Mruzek et al., 2007 Sibley et al., 2014., Stover et al., 2008). Van Camp et al. (2003)

described procedures that broke down the process into steps, which makes it easier for behavior contracts to be successful. The results of the present study demonstrate that this technology can be more effective if identical steps are applied to parents' behavior in terms of their adherence to following all the steps in the intervention.

Van Camp et al. (2003) discussed that using a behavior contract becomes complicated because many steps can be required to make its use effective. For this reason, simply giving parents a list of steps and explaining it to them is not likely to be enough (Stoutimore et al., 2008). The data collected from the baseline phase of the present study indicated that providing parents with a list of steps, explaining the steps to them, and giving them an opportunity to ask questions were also not enough. These results suggest the outcomes of contracts for child behavior can be made more effective when parents have contracts for their own behavior. Reinforcers should be specified to reinforce meeting these goals.

Certain steps in the checklist that the parents used to implement a behavior contract for the child's behavior seemed particularly important for their success. Similarly, the same steps appeared to be of primary importance when implementing a behavior contract to improve parent behavior. Steps that helped get the process of using a behavior contract started correctly seemed critical, as summarized below. The importance of these steps is consistent with results found by Crosland et al. (2008), Stoutimore et al. (2008), and Van Camp et al. (2003).

The first recommended step, which seemed particularly important, involved having the contract meeting at a time and place away from the problem behavior. Choosing to discuss noncompliance at times, separated from those when a child is not following a directive, can help to eliminate a trigger for problem behavior (Crosland et

al., 2008; Jolivette et al., 2018; Latham, 1994). This meant that the parent could not start the conversation while the child was engaging in the problem behavior. No participant did this during baseline observations, as all three participants started the conversation while the child was not doing what they were supposed to be doing. This led to considerable problem behaviors. For Participant 1, nighttime was out, as this was when Participant 1's child wanted as much time as possible to talk to her friends. It was also a time when her phone was soon to be taken away by her mother, which was always a point of contention. Once it was added to her contract, Participant 1 decided to pick the time just after dinner and the place to be at the living room table. This study extended this concept to have meetings with parents at a time away from when they were not adhering to the instructions provided to them with similar results.

The second important step involved starting the conversation positively, the effects of which have been demonstrated to improve compliance for children (Forehand et al., 2011; Wilder, Nicholson, et al., 2010). This step had some overlap with the first identified important step described above. If you started during the problem behavior, it was no longer possible to start positively (Stoutimore et al. 2008). Starting positively required the parent to start either with a compliment about past performance or by stating the reinforcer that could be earned prior to stating the expectation (Stoutimore et al., 2008; Van Camp et al., 2003). Nobody used this step during baseline. Participant 1 indicated she did not like this step as she felt she wanted to "get to the point." She did do this when formally added to her contract in Session 7, however. She remembered to do it during most intervention sessions. Once Step 2 was added to her contract, Participant 2 always did it.

A third important step that everyone struggled with was to avoid criticism and

other reactions to inconsequential problem behavior, such as rolling eyes. Similar to findings in the literature in which providing attention as a consequence escalates problem behavior (Jolivet et al., 2018), this study found that participants providing attention to problem behaviors often led to their escalation to more serious problem behaviors. Finally, research has demonstrated that providing positive reinforcement for child compliance is important (Majdalany et al. 2017). A step that both Participant 1 and Participant 3 had difficulty with was providing verbal praise when an expectation was met. For example, Participant 1 stated that she should not need to praise her child for something she should be doing. She also struggled to avoid giving criticism either for inconsequential problem behavior or for not meeting the expectation fast enough or not doing it on previous occasions. Using a behavior contract can help children understand the behavior that is expected of them (Locke & Latham, 2002; Sibley et al., 2014). Similarly, Participants 1 and 3 learned to use verbal praise when their child met an expectation once this goal was formally added to their contract.

Some participants mentioned added benefits of their participation in the present study. All three participants found that this intervention improved the relationship each of them had with their child. This was similar to the findings in a studies by Mruzek et al. (2007) and Sibley et al. (2014), who found that the process of using behavior contracts fostered collaboration. Although the behavior of the participants' children was not measured in this study, all three participants shared that their child's behavior did improve. Participant 1 mentioned that she yells less often and felt her daughter makes fewer hurtful statements. Participant 2 expressed that she can relax more as her son behaves better. She shared that he is avoiding her less. Participant 3 shared that his son improved not only on the behaviors written on his contract but it positively impacted his

behavior in other areas for which no reinforcer was specified. Participant 3 stated that his improved relationship with his son was an unexpected benefit of this intervention.

Limitations

Inferences drawn from the present study should take the following limitations into account:

1. Information on the extent to which behavioral gains were maintained is limited.

A maintenance probe was conducted only 1 week after the intervention, which is not a long enough period to create confidence that gains will maintain long-term. One participant (Participant 3) commented that he rehearsed prior to the researcher's arrival to get "a high score." This does not address whether there would be real maintenance when no researcher is involved.

2. Another limitation involved identifying reinforcers for parental behavior that participants would give to themselves in addition to the reinforcers provided by the researcher (i.e., Amazon gift cards). Participant 1 picked a drink at Starbucks as a self-applied reinforcer. This was something that she used to treat herself with before the intervention. She admitted that, on one occasion, she did not reserve the treat as a reinforcer for meeting her objectives, but actually bought it for herself before she had met her goal. Also, on another occasion, after her goal was met, Participant 1 shared that she did not feel like driving to Starbucks and skipped the reinforcer. Participant 2 struggled considerably to think of anything to use to reinforce her behavior. What she really wanted was something that she could not provide herself, but something she wanted from a family member. Although she identified a dessert as her self-applied reinforcer, she felt the best reinforcer for her participation had been time speaking to a therapist. Participant 3 identified playing video games as a reinforcer for meeting goals. He shared that he tried

to be consistent but was sometimes not good about giving himself the reinforcer when he earned it. This was especially the case when he did not have time to play his games. Another concern was that, on at least one occasion, Participant 3 did not restrict the reinforcer when it was not earned. A powerful reinforcer for his behavior appeared to be earning a higher score than the session before. Participant 3 maintained their improvement during the maintenance probe. Participant 3, having scored 100% during the last intervention session, maintained his 100% score during the maintenance probe when no behavior contract was in place for his behavior. Participant 3 stated that he did not formally use a contract but rehearsed using all the steps as he did not want to lose his score.

3. A third potential limitation is that outcome data were not collected for the participants' children. Although all three participants indicated that their child's behavior improved, this could not be verified with concrete data. Therefore, no correlation could be made between child and parent outcome data.

Future Research

In order to have parents maintain their adherence to the current intervention, participants identified reinforcers that they gave themselves on a daily basis when goals were met. This proved to be less successful than predicted. Without good procedures to maintain behavioral gains, these improvements may regress over time, negating the usefulness of an effective intervention. Future research might also look at the extent to which social reinforcers could help maintain behavioral gains. Connell et al. (1993) found that preschool children with developmental disabilities could learn to solicit verbal praise from teachers as a reinforcer for their behavior. Soliciting praise from family and friends could reinforce meeting goals in a program like the present one. Alternatively, a group of

parents, meeting in person or online, might help parental adherence behaviors to maintain. There are apps online that are suited for this type of peer-mediated reinforcement. Baretta et al. (2019) investigated the goal-setting component of physical activity apps. No studies, to the writer's knowledge, have used apps to reinforce parental adherence to behavior contracts. This could be an avenue for future research. Finally, as described above, the present study did not correlate parent progress with outcome data for their child and did not monitor the behavior of the participants' children. Future studies could correlate the results of parent contracts with their child's outcome data.

Conclusion

This researcher has used behavior contracts in her work as a Board Certified Behavior Analyst. The procedure described by Van Camp et al. (2003) has been very helpful in that it breaks down the process of using a behavior contract and the specific behaviors that make it work. This researcher conducted the present study because she continues to struggle to teach parents to follow many steps in the procedure used by Van Camp et al. that should help parents get good results. In the past, this researcher had never made a specific behavior contract for the parents' behaviors nor identified reinforcers for the parents' behavior. This researcher did provide verbal praise, and perhaps, what was really reinforced was participation more than anything else. The data collected in the present study showed a more positive response to intervention than initially expected. Partly this is because baseline levels were lower than initially expected, the researcher having never collected data on the behavior of parents before. Without collecting parental behavior data, it may be too easy for researchers and practitioners to overestimate how well a parent implements a behavior contract.

A limitation of this study is that it is a time-consuming and labor-intensive effort.

However, a benefit is that if the time is taken to teach every step in the manner prescribed, including the use of a behavior contract for the parent's behavior, and, importantly, time and effort is devoted to reinforcing the parent's behavior, it is likely that parents will be empowered to have better results with their children's behavior. The present study's results support parents' critical role in helping their children improve their behavior by giving parents a tool that will enhance their success in implementing behavior contracts with their children.

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Appendix A
Competency Checklist

Competency Checklist

Supervisee Name: _____

Behavior Analyst: Sara Richardson Date: _____

	Part I: Make the Contract	Yes	No	N/A	Comments
1	Time (away from the behavior)				
2	Set a positive tone.				
3	Daily expectations (behaviors) are clearly and positively stated. (when, where, what, how).				
4	Weekly expectations are clearly and positively stated.				
5	Expectations are reasonable to current performance.				
6	Immediate consequences for meeting/not meeting are stated in terms of earn/not earn/not earn.				
7	Delayed consequences for meeting/not meeting are stated in terms of earn/not earn.				
8	Consequences match the value of the behavior.				
9	Review times stated for daily and weekly review.				
Part II: Review the Contract					
10	Discuss contract positively.				
11	Briefly reflect the child's feelings (empathy), if necessary (for example, "You sound upset...").				
12	Notice expectations met and use lots of praise.				
13	If expectation IS met, deliver the immediate or delayed positive consequence (for example:				

	sticker, watch a TV show).				
14	If expectation IS NOT met, review the contract by asking the child to state the expectations and the consequences.				
15	Ignore inconsequential problem behavior (Eye rolling)				
16	Avoid criticism				

Appendix B
Behavior Contract

Behavior Contract

Dates of contract: Begin _____ End _____

The contract will be reviewed at _____ (daily and _____ (weekly).

Expectation	REWARD
Who:	Who:
Daily Expectation:	Daily Consequence:
Weekly Expectation:	Weekly Consequence:
Signature:	Date:
Signature:	Date: