Article

Hammill Institute on Disabilities

Journal of Positive Behavior Interventions
1–11
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DOI: 10.1177/1098300714564164
jpbi.sagepub.com
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Effects of Coaching on the Implementation of Functional Assessment–Based Parent Intervention in Reducing Challenging Behaviors

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Abstract

This study examined the effects of coaching on the implementation of functional assessment–based parent intervention in reducing children's challenging behaviors. A multiple baseline across participants design was used with three parent–child dyads with children between the ages of 2 and 5 years. The intervention consisted of training and delayed coaching to examine the effects of coaching following the training session. Results document that when coaching was provided, parents were able to implement the function-based strategies consistently at a high level, which resulted in the reduction of children's challenging behaviors. Contributions to the literature, implications, and future directions are discussed.

Keywords

family-based, intervention(s), challenging, behavior(s), early childhood, family(ies)

The treatment of young children's challenging behavior has received considerable attention over the last two decades. Studies have documented that persistent challenging behaviors observed at a young age is highly associated with poor social and academic outcomes later on in life (e.g., Dunlap et al., 2006; Gilliam, 2005). These findings stress the importance of supporting children who engage in challenging behavior by providing individualized interventions to help reduce the occurrence of challenging behaviors and increase positive behaviors. There are evidence-based practices effective in changing this developmental trajectory.

Although it is well documented that challenging behaviors are a significant barrier to effective teaching in classrooms (Joseph, Strain, & Skinner, 2004), similar challenges also occur in the home settings. Families of young children with persistent challenging behaviors face considerable demands and affect a family's ability to participate in home routines and community activities (Lucyshyn et al., 2004). These impacts draw attention to the importance of providing effective behavior interventions that increase the positive parent–child interaction. Furthermore, research shows that negative and controlling parenting practices place children at risk for developing behavior problems and could affect children's social skills and academic competence at school (Stormont, 2002; Stright, Gallagher, & Kelley, 2008). Thus, parents' interactions with their children and their reactions to children's challenging behaviors are key components that require further investigation. Parent intervention research in addressing challenging behaviors has been associated with increased use of positive parenting practices (Kaminski, Valle, Filene, & Boyle, 2008), increased parenting sense of competence (Graf, Grumm, Hein, & Fingerle, 2014), and reduced parent stress (Minjarez, Mercier, Williams, & Hardan, 2012).

An important value when working with young children is emphasizing family-based practices (McLaughlin, Denney, Snyder, & Welsh, 2012), which focus on family strengths, promote family choice and control over desired resources, and stress the development of collaborative relationships between parents and professionals. The family is a child's most valuable and durable resource and exerts a powerful influence on a child's development (Guralnick, 2006). One such intervention approach that emphasizes family strength and has documented effectiveness is functional assessment

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Action Editor: Mark Durand

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(FA)–based parent intervention derived from the framework of positive behavior support (PBS).

PBS is a collaborative, assessment-based approach to developing effective, individualized interventions for those with challenging behaviors (Lucyshyn, Horner, Dunlap, Albin, & Ben, 2002). The use of PBS with families is developed based on the broad foundations of applied behavior analysis, behavioral family intervention, community support movements, and family systems theories about child development and family life. The PBS framework guides the creation of a behavior support plan that is a "good fit" for the family and the environment in which the interventions plan to be implemented and focuses on improving parents' interactions with their child and their use of PBS strategies within natural family routines (Duda, Clarke, Fox, & Dunlap, 2008; Lucyshyn et al., 2002). A behavior support plan that is contextually appropriate for the family should consider goals and values of the family, strengths and supports for the family member who will be implementing the plan, as well as the child's strengths, skills, and likes and dislikes. Other research suggests incorporating problem solving (Chacko et al., 2008) and using a parent–professional collaboration approach (Brookman-Frazee, Stahmer, Baker-Ericzen, & Tsai, 2006) when working with parents. A behavior support plan that is technically sound but does not possess a good contextual fit for the family may be rejected by families, implemented inaccurately, or unsustainable over time (McLaughlin et al., 2012).

Unfortunately, a literature review conducted on FA-based parent intervention (Fettig & Barton, 2014) indicated that only 4 studies of the 13 identified studies of this nature met the rigorous design standards proposed by What Works Clearinghouse (WWC; Kratochwill et al., 2014). This finding indicates a need for rigorous studies to provide evidence for the effectiveness of this type of parent intervention. Furthermore, effectiveness of intervention is highly associated with whether or not the research plan is carried out as intended or with fidelity (Fixsen, Naoom, Blase, Friedman, & Wallace, 2005; O'Donnell, 2008). In this literature, implementation fidelity refers to the procedures used to support the parents' use of FA-based intervention; intervention fidelity refers to the individualized practices outlined in the PBS plan (Dunst, Trivette, & Hamby, 2008; Dunst, Trivette, McInerney, et al., 2008). High implementation fidelity yields high intervention fidelity, which results in positive child outcomes (Barton & Fettig, 2013). Unfortunately, FA-based parent intervention literature grossly underreports implementation fidelity and intervention fidelity (Fettig & Barton, 2014). This limits interpretations of the effectiveness of FA-based parent intervention. It is documented that when interventions move from training setting to natural implementation settings, intervention fidelity may be reduced (Dickinson, 2011; Marulis & Neuman, 2010). Thus, intervention and implementation fidelities are crucial factors in yielding positive child outcomes, and systematic investigation is warranted.

Because effectiveness of intervention is highly associated with high levels of intervention fidelity, one approach to improve intervention fidelity is to use coaching strategies within the intervention program. Studies have reported that training outcomes significantly increased when coaching and support were provided (Fukkink, 2008; Joyce & Showers, 2002). Coaching improves the fluency of trained skills and enhances the ability for interventionists to adapt the trained concepts and skills to the contexts at hand and challenges faced. This in turn improves the fidelity of overall implementation and improves sustainability (Rodriguez, Loman, & Horner, 2009). Research suggests that parents need more than just the initial training to meet criteria for specific skills; more intense versions of parent training programs yield greater outcomes for children when compared with less intense versions (Nowak & Heinrichs, 2008; Sanders, Markie-Dadds, Tully, & Bor, 2000). To date, no study has systematically investigated the effects of coaching on FA-based parent intervention. FA-based parent intervention with an emphasis on increasing implementation and intervention fidelity shows promise in effectively reducing children's challenging behaviors in the home setting and warrants further investigation.

The purpose of this study is to extend the literature on function-based parent interventions by using rigorous methodology to examine the effects of coaching on parent implementation of the FA-based strategies. Specific research questions are as follows:

Research Question 1: To what extent does coaching affect parents' implementation of FA-based strategies?
Research Question 2: To what extent does level of parent implementation of function-based strategies reduce children's challenging behaviors?

Method

Participants and Settings

Three parent–child dyads participated in this study. Participants were recruited in the east central region of the United States through a local mother's club listserv, libraries, and childcare centers. Criteria for participation in this study included the following: The child was between 24 and 72 months of age, the child had an identified disability, the child's challenging behavior was reported to be a serious concern in the home setting, and the participating parent was able to be present at all observations, training sessions, and coaching sessions. Child behavior severity was assessed and verified using the Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2001).

Jack. Jack was 46 months of age at the beginning of the study and lived with his parents and a younger sibling. Jack received a diagnosis of autism by his preschool's interdisciplinary team and also had a diagnosis of hypoxic-ischemic encephalopathy. He was delayed in language and cognitive

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skills. Jack attended a preschool program where he received speech and language and occupational therapy. Jack's parents reported that he exhibited persistent challenging behaviors throughout the day, with transitioning out of the bathtub being particularly challenging. He would hit, cry, and cling to objects in an attempt to stay in the tub. In an effort to get Jack out of the bathtub, his parents would often resort to making promises of highly preferred activities or objects but typically would not follow through with the activities. Jack's dad was the primary parent participant and chose the morning bath routine as the focus of intervention.

Emma. Emma was 41 months of age at the beginning of the study and lived with her parents and three siblings. Emma was diagnosed with sensory integration disorder at the age of 36 months but did not have identified delays. Emma attended a preschool program where she received occupational therapy once a week. Emma's mother reported that Emma exhibited challenging behaviors frequently in the form of screaming, yelling, and hitting her siblings and parents. In particular, these behaviors occurred frequently during mealtimes. Emma's mother reported that she often resorted to screaming, spanking, and putting her in timeout and would like to find alternative ways to interact with Emma during these challenging times. Emma's mother chose the lunchtime routine as the primary focus of intervention.

Liam. Liam was 71 months of age at the beginning of the study and lived with his parents. He was diagnosed with autism from a developmental pediatrician at the age of 24 months but did not have cognitive delays. Liam attended a preschool program where he received services from an occupational therapist, speech–language pathologist, and resource teacher. He was also a part of a social skills group outside of school. Liam's mother reported he had difficulty following directions, and getting dressed in the morning was particularly challenging. During this routine, Liam frequently left the room in the middle of dressing and was frequently off task, increasing the amount of time it took him to get ready in the morning. Liam's mother tried several strategies including redirection, prompting, picture cards, and positive reinforcement. Liam's mother chose the morning getting dressed routine as the primary focus of intervention.

Setting. The study was conducted in each child's home environment during the target routines identified by the participating parents. The presence of challenging behavior during these routines was confirmed through direct observation by research staff. Jack's target routine was carried out in the parents' bathroom, Emma's at the dining table in the kitchen, and Liam's in his bedroom. Parent–child interactions during these routines were observed throughout the study. The length of each observation for each dyad was based on the length of time it took to complete the routine identified by the parent. Training and coaching sessions were conducted in the home setting, typically in the dining room or family room.

Experimental Design and Procedures

A multiple baseline across parent–child dyads was used to examine the effects of FA-based parent intervention and coaching in reducing challenging behaviors. This study provides data on the parent implementation of FA-based strategies as well as challenging behaviors displayed by the three child participants across the four phases: Baseline (A), Intervention (B), Coaching (C), and Withdrawal of Coaching (D). Efforts were made to implement a phase change only when both parent and child behavior were stable; however, baselines were not extended for lengthy periods due to the practical urgency in supporting parents to resolve challenging behaviors. It is important to note that parent behaviors were stable prior to all phase changes.

Functional behavior assessment. Prior to baseline, the researchers conducted functional behavior assessments using FA interview and direct observations (O'Neill et al., 1997). The researchers worked closely with the parents in analyzing the interview and observation data to determine the functions of the challenging behaviors. Functional analysis was not conducted because the challenging behaviors were not complex and to prevent the need for prolonging the introduction of intervention strategies. Furthermore, research has shown that direct and indirect assessment procedures associated with functional behavior assessment can be just as effective in identifying the function of challenging behavior as a functional analysis (Alter, Conroy, Mancil, & Haydon, 2008).

When Jack's father would request that he transitions out of the bathtub to get dressed, Jack would refuse by crying, screaming, and hitting and then cling on the faucet, which resulted in Jack staying in the bathtub longer. He would only leave the bathtub if he were allowed to get in the shower. Once he was out of the bathtub or shower, he did not try to regain access to either. The function of his behavior was identified to be negative reinforcement in the form of avoiding the transition to dressing. When Emma was asked to sit still and eat during mealtime, she would get out of her seat to hide behind doors, scream at her parents and siblings, and engage in verbal battles with her siblings, which resulted in her mother verbally redirecting, yelling, or physically prompting Emma. When her mother was engaged with her, she would remain in her seat and eat her meal. The function of her behavior was identified to be positive reinforcement in the form of attention. When Liam was asked to get dressed in the morning, he would ignore directions, leave his bedroom, whine and hide under his covers, which resulted in delaying the dressing routine. The function of his behavior was identified to be negative reinforcement in the form of escaping from the task.

Baseline (A). During baseline sessions, dyads were observed by the authors 3 times per week during the targeted routine. The participating parents were instructed to interact with

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their children as they normally would during the targeted routine. The parents did not receive instructions regarding challenging behaviors and were told only to follow the routines as they normally would. Baseline data were collected for a minimum of three sessions per dyad and until both parent and child behaviors displayed a stable trend.

Collaborative behavior support plan development and parent training. Following baseline and immediately before intervention phase, the researchers met with parents individually to collaboratively create an intervention plan and to train parents on implementing the FA-based strategies. The information gathered and hypothesis drawn from the functional behavior assessments served as the primary guide to the development of the intervention plan, and the interventions were developed in collaboration with each participating parent. This individualized parent training session consisted of (a) a discussion on the importance of social emotional development in young children and why challenging behaviors occur; (b) a review of the functional behavior assessment information and baseline data; (c) a presentation on possible strategies for different behavior functions; (d) a discussion on prevention strategies, replacement skills, and new responses to challenging behaviors to collaboratively create the behavior support plan; (e) modeling by the trainers on how to implement the behavior support plan during the target routine; and (f) an opportunity for the participating parent to ask questions regarding implementation of the behavior support plan.

Throughout the training, parents were encouraged to share their parenting philosophies and values and experiences of strategies they tried before the study. Together, the researchers and parents brainstormed ideas of what might be helpful for the child based on the child's strengths and the parent's own home/parenting philosophies and values. In addition, videos of other parents implementing FA-based strategies and sample visual supports were also shared with the parents. Based on this discussion, the researchers provided parents with choices of intervention strategies and visual supports. The researchers took notes on parent choices, and at the end of the training, each parent was given the collaboratively created behavior support plan with a description of target behaviors, functions of the behaviors, and strategies to try during the routine. Any visual support materials needed to implement the behavior support plan were also provided. See Table 1 for the FA-based strategies listed for each participating dyads' behavior support plan.

All trainings were conducted by the first or the second author, both with PhDs in special education, who had experience training parents on creating behavior support plans and implementing FA-based strategies. Each training session lasted approximately 2 hr and was provided in the family's home.

Intervention (B). The first dyad to be exposed to the intervention condition was Jack, followed by Emma and then Liam. During this phase, the participating parents were instructed to implement the FA-based strategies as instructed during training. The parents did not receive further instruction regarding the strategies. Intervention conditions were observed until both parent and child behaviors displayed a stable trend.

Coaching (C). During this phase, parents received coaching from one of the researchers during the targeted routine. The first coaching session was provided at the end of the last intervention observation session. Coaching sessions were conducted at the end of an observation session to directly address missed opportunities during the target routines and provide positive feedback on successful use of strategies. During each coaching session, the researcher walked the parents through the FA-based strategies in their individual behavior support plan and followed the following format: (a) feedback on what went well during the routine, (b) what could be improved, (c) modeling of missing or misused strategies, and (d) opportunity for questions from parents. For example, the researcher applauded Liam's mother for consistently providing Liam with verbal reinforcement for being on task during his dressing routine and explained that such reinforcement supported Liam in learning the expectations during the routine. Liam's mother had a difficult time implementing the break card as a visual support. Together, the researcher and the Liam's mother brainstormed how the visual cue could be used within the dressing routine and where in the bedroom it would be displayed. Videos of observed sessions were also available for review by the researchers when needed. Dyads remained in this phase until parent and child behaviors displayed a stable trend, and parents were able to demonstrate implementation of all parent strategies for two consecutive sessions.

Withdrawal of Coaching (D). This phase occurred immediately following the coaching phase and lasted for 2 weeks. During this phase, coaching was withdrawn from the target routine. The participating parents were instructed to continue to implement the behavior support plan, and feedback was no longer provided.

Data Collection

All observation, training, and coaching sessions were videotaped for data coding and analysis purposes by a graduate research assistant or one of the researchers. Videos were coded by the first author. Thirty-three percent of the videos were coded independently by the second author to establish reliability.

Parent dependent variable. Parent's implementation of the behavior support plan was the parent dependent variable for

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Table 1. Behavior Support Plans for Parent–Child Dyads.

Parent–child dyad	Behavior support plan
Jack and Dad	Use timer to indicate when transition will start.
	Teach Jack to follow the timer.
	Have all materials ready for transition (timer, visual schedule, reward).
	Follow through on timer—Start transition when timer goes off.
	Use FIRST-THEN verbal statement to provide directives (e.g., "first you get out of the tub, then you can have your truck.")
	Follow through on providing reward when Jack gets out of tub.
	Provide at least one descriptive praise statement on positive behaviors observed.
	When challenging behavior occurs, use verbal redirection (refer to timer, use FIRST-THEN statement) or physical redirection (remove Jack from the tub).
Emma and Mom	Provide positive attention by engaging Emma in helping prepare lunch and support her in seating selection.
	Provide positive attention during lunchtime routine when Emma is not engaging in challenging behaviors (e.g., discussion of upcoming events, starting conversations by asking Emma for her opinions).
	Before starting lunch, review the expectations with Emma (e.g., "If you join everyone and eat your lunch, you can watch a movie after you eat.")
	Provide at least one descriptive praise statement on positive behaviors observed.
	When Emma engages in challenging behaviors that are not harmful, use planned ignoring.
	When challenging behavior occurs, redirect her to expectations and rewards.
	Follow through on rewards after Emma has met lunchtime expectations.
Liam and Mom	Use FIRST-THEN visual schedule to indicate to Liam that he has to first get dress and then he can receive his reward.
	Provide a choice of the reward.
	Teach Liam to request for a break when needed.
	Clearly state expectations (e.g., "You need to sit on the toy chest to get dressed. If you need a break, you can request a break.")
	Reduce distraction by doing the following:
	Provide a space away from the bed for Liam to get dressed.
	Allow Liam to choose all his clothing before starting to get dressed.
	Provide at least one descriptive praise statement/positive reinforcement for being on task.
	When challenging behavior occurs, redirect Liam to the FIRST-THEN visual schedule, break card, and/or restate expectations and redirect Liam to return to designated space to complete task.
	Follow through on rewards after Liam has completed the dressing routine.

this study. A checklist was created to include all FA-based strategies for each of the participating dyad listed in Table 1, and data were collected on the presence or absence of each of these strategies. These data were summarized as the percentage of steps implemented during each session and were calculated by dividing the number of steps implemented by the number of total steps that could be implemented and then multiplying by 100.

Child dependent variable. The primary child dependent variable in this study was challenging behavior. Challenging behavior was defined as any occurrence of inappropriate behavior including tantrums, noncompliance, inappropriate interaction, verbal aggression, property destruction, and physical aggression toward others or self. *Tantrums* were defined as high intensity screaming and crying combined with physical resistance, disruptive or destructive behavior that interrupts the continuation of targeted routines, and/or physical aggression. *Noncompliance* was defined as no attempt within 5 s to follow a specific adult directive (e.g., can you put on your socks). *Inappropriate interaction* included resisting or turning away from the adult who was assisting the child and/or leaving designated task areas while the routine was still in progress (e.g., leaving the dinner table during mealtime or bedroom during dressing time). *Verbal aggression* was defined as yelling, whining, and screaming using high pitch or loud utterances as well as hurtful language (e.g., "You are stupid," "Get away from me") that presented defiant or insulting comments. *Property destruction* included destroying or attempting to destroy properties using the actions of throwing, punching, hitting, and kicking. *Physical aggression* was defined as hurtful physical actions toward another person or self, such as hitting, kicking, biting, or grabbing. Challenging behaviors were coded using 15-s interval partial time sampling. Percentage of time child exhibited challenging behaviors was calculated by dividing number of intervals with challenging behaviors by the total number of

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intervals and then multiplying by 100. Because the length of observation differed for each parent–child dyad due to the nature of the targeted routine, each video was coded until the target routine was complete or up to 30 min of each observation.

Duration of task completion was also collected for two of the three participants (Jack and Liam). Duration of task completion was not gathered for Emma because the length of mealtime was not a concern for the parent, and reducing the length of time spent at mealtime was not a focus of the intervention. The amount of time spent transitioning out of the bathtub was recorded for Jack. The transition period was defined as when parent provided the first directive to get out of the bathtub until the moment Jack's feet touched the ground outside of the bathtub. For Liam, the amount of time spent getting dressed was recorded and defined as when parent provided first directive to get dressed until all clothing required for the day were on his body.

Reliability

The first author served as the main data coder for this study, and the second and the third authors served as the interobserver agreement (IOA) data coders. More than 30% of all videotaped sessions across all phases were coded for IOA. The IOA observer participated in training using observation sessions not selected for IOA coding. Reliability assessments were calculated by dividing the number of agreements by the number of agreements plus disagreements. These calculations were conducted for total agreement and agreement on occurrences. The mean total agreement reliability for child's challenging behavior coding was 91% (range = 82%–100%). The mean total agreement reliability for child task duration was 96.5% (range = 81%–100%). The mean total agreement reliability for parent implementation of behavior support plan was 100%.

Fidelity of Implementation

Fidelity of implementation was assessed to determine whether the training and coaching sessions were conducted as intended. A training protocol checklist was developed to record implementation of the training steps and the content of the steps. This checklist was used to determine whether or not the training protocols were followed during the training. Videotapes of all three training sessions were viewed by a graduate research assistant. Fidelity of implementation was 100% for all three observations, indicating that the trainings were conducted as intended.

Fidelity of implementation of coaching procedures was also assessed. A coaching protocol checklist was developed to record implementation of coaching strategies. The second author who did not serve as a coach for participating families assessed audiotapes of 20% of coaching sessions. Fidelity of implementation for coaching was 100% for all sessions assessed, indicating that the coaching procedures were implemented as intended.

Social Validity

Social validity was assessed upon completion of the final phase to evaluate the acceptability, efficacy, and feasibility of the FA-based parent intervention. Parents completed a 17-question parent training evaluation measure created to obtain parent opinions on the effectiveness and feasibility of the intervention. The questionnaire consisted of 7 questions that used a 5-point Likert-type scale ranging from *strongly disagree* to *strongly agree* and 10 open-ended questions. Items in the social validity questionnaire included items to assess knowledge gained from the study, "goodness of fit" of the behavior support plan, and reflection of if/how participating parents have used the strategies learned outside of the target routine.

Results

The data display (see Figure 1) shows the percentage of parent implementation and the percentage of time children exhibited challenging behavior across the three parent–child dyads in the multiple baseline design. See Table 2 for mean and range data for percentage of parent implementation of FA-based strategies and percentage of intervals with child's challenging behaviors.

Parent Implementation of FA-Based Strategies

The data indicated that two of the parent participants were not using any FA-based strategies prior to the training session, and one of the parents was consistently using one strategy (i.e., positive reinforcement) at baseline. Parents were able to implement some strategies after the training session, prior to the start of the coaching phase ($M = 58.3\%$). When coaching was provided, parents were able to implement the strategies at a high level consistently ($M = 94.7\%$), reaching 100% implementation prior to the end of the coaching phase. Parents were able to maintain the full implementation of FA-based strategies after coaching was withdrawn ($M = 100\%$).

Child Behaviors

The data indicated that all three participants exhibited persistent challenging behaviors at a high level at baseline, with Jack's behavior being the highest at a mean of 78.7% of intervals, followed by Emma at 61.2% and Liam at 56.3%. Percentage of intervals with challenging behaviors showed a consistent decrease from intervention phase to coaching phase and withdrawal. The mean percentage of

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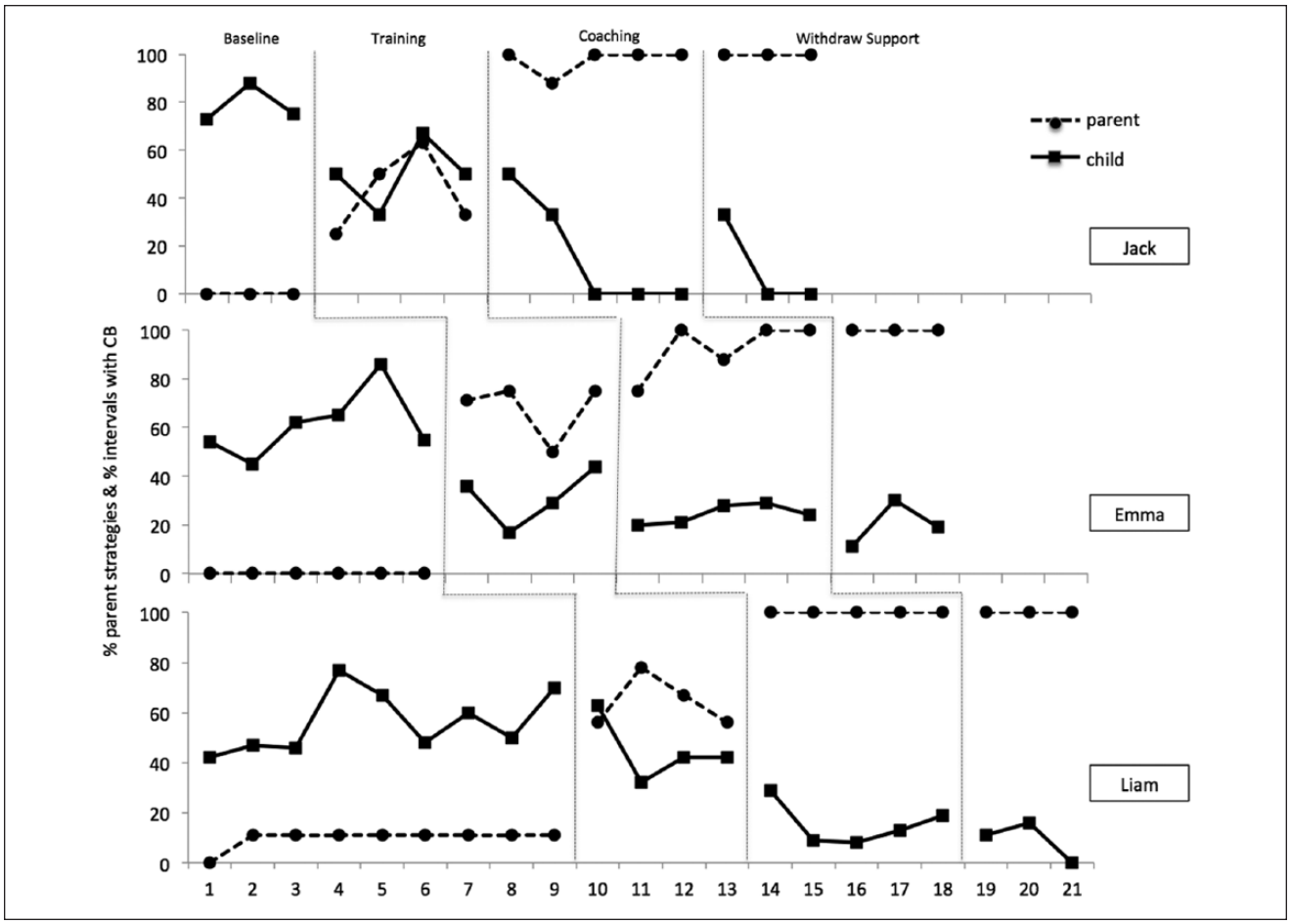

Figure 1. Percentage of parent strategies implemented and percentage of intervals with challenging behaviors (CB).

Table 2. Mean and Range for Percentage of Strategies Implemented by Parents and Percentage of Intervals With Challenging Child Behavior.

	Baseline (A)		Intervention (B)		Coaching (C)		Withdrawal of Coaching (D)	
Dyads	Parent	Child	Parent	Child	Parent	Child	Parent	Child
Jack	0	78.7 (72.7–87.5)	42.8 (25–63.3)	50 (33.3–66.6)	97.6 (88–100)	16.6 (0–50)	100	11 (0–33.3)
Emma	0	61.2 (44.8–85.7)	67.8 (50–75)	31.5 (16.7–44.2)	92.6 (88–100)	24.4 (20–28.9)	100	20 (10.8–30.3)
Liam	9.8 (0–11)	56.3 (42.3–76.5)	64.3 (56–78)	44.8 (31.6–63.3)	100	15.6 (7.7–29.2)	100	9 (0–15.8)

intervals with challenging behaviors across all three child participants was 65.4% at baseline, 42.1% during intervention, 20.1% when coaching was provided, and 13.3% after coaching was withdrawn. It is important to note that the level of behavior change was most noticeable between training and coaching phases, indicating that when parents implement FA-based strategies at a consistently high level, challenging behaviors decreased to a much lower rate.

Task duration data were also gathered for Jack and Liam. For Jack, the mean task duration during baseline was 4 min 43 s (range = 2:35–8:01). During the intervention phase, the mean task duration was 24 s (range = 0:13–0:35). For coaching and withdrawal of coaching phases, the mean task duration was 19 s (range = 0:08–0:28) and 13 s (range = 0:08–0:24), respectively. For Liam, the mean task duration during baseline was 7 min 33 s (range = 5:00–8:45). During the intervention phase, the mean task duration was 5 min 54 s (range = 4:30–8:22). For coaching and withdrawal of coaching phases, the mean task duration for Liam was 5 min 31 s (range = 5:00–6:30) and 3 min 15 s (range = 1:15–4:45),

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respectively. The data presented a decrease in task duration for both children from baseline to intervention, with further decreases during the coaching phase. When coaching was withdrawn, the two child participants were still able to complete the tasks in a short time frame.

Social Validity of FA-Based Parent Intervention

Two of the three participating parents returned the social validity survey at the end of the study. The average social validity rating regarding behavior changes observed by parents was 4.6 (range = 4–5). Both parents strongly agreed that they gained knowledge about dealing with challenging behaviors and made changes to the way they interact with their children. The average rating for satisfaction with the FA-based parent intervention program was 5, with both parents stating that they enjoyed participating in the study and would recommend the program to other parents. Overall, parents who returned their social validity surveys were very satisfied with the FA-based parent intervention program.

Discussion

The study was conducted to investigate the effects of coaching on parents' implementation of FA-based parent intervention and how they reduce children's challenging behaviors. The results extend current research in the field and provide evidence on the use of FA-based strategies in reducing children's challenging behaviors. First, this study showed that prior to coaching, parents used FA-based strategies inconsistently and with moderate fidelity. When coaching was provided, parents were able to implement the strategies at a high level and eventually implement all strategies consistently even after coaching was withdrawn. Second, as parents increased their use of the FA-based strategies, the rate of their children's challenging behaviors decreased. The decrease of children's challenging behaviors was most dramatic in the coaching phase, and the low rate of challenging behaviors maintained after the coaching was withdrawn. This provides evidence that outcomes significantly increased when coaching was provided to support the fidelity of implementation (Fukkink, 2008; Joyce & Showers, 2002). Following is a discussion of the implications of these findings.

Parents increased their implementation of the strategies learned from the initial training, though not with fidelity. This is consistent with other research which shows that parents generally benefit from parent training (Brookman-Frazee et al., 2006) but may need additional support to reach high level of fidelity to yield positive child outcomes (Lerman, Swiezy, Perkins-Parks, & Roane, 2000). In this study, parents were trained to use a PBS model for problem solving and creating FA-based strategies that worked for their families. Other research has supported the use of FA-based intervention (Duda et al., 2008), incorporating problem solving (Chacko et al., 2008), and/or parent–professional collaboration (Brookman-Frazee et al., 2006; Trivette & Dunst, 2000) during parent training. Interventions with these characteristics have been documented in the literature as being effective methods for parent training programs. However, the literature has indicated a need for rigorous studies to provide evidence of effectiveness of function-based parent intervention (Fettig & Barton, 2014). The current study found that parents did in fact display the new skills taught in the parent training that combined these characteristics. Furthermore, the initial training was delivered during a 2-hr training session. It is important to note that parents were able to implement some of what they learned after such a short training, which provides support for the impact of this particular combination of parent training characteristics (FA-based, problem solving, and collaborative). Although the literature has documented support for effectiveness of parent training across a range of frequencies and durations (Brookman-Frazee et al., 2006), in many instances ongoing training is not practical or even possible because of limited resources. This study provides support for the benefits of parent training programs when the training program is designed consistent with a PBS model and delivered in a problem-solving, collaborative approach.

Perhaps, more importantly, this study sought to identify an efficient, yet effective, approach to supporting parents in reaching fidelity. As noted by other research, the effectiveness of intervention is highly associated with fidelity (Fixsen et al., 2005). Despite the evidence that fidelity is key to intervention effectiveness, it is underreported in the parent intervention literature (Duda et al., 2008; Harding, Wacker, Berg, Lee, & Dolezal, 2009; Schultz, Schmidt, & Stichter, 2011). The current study specifically assessed intervention fidelity of parents' use of FA-based strategies and found that all parents reached 100% fidelity during the coaching phase. This is consistent with research that has suggested training outcomes are increased when parents receive coaching and feedback (Joyce & Showers, 2002). Although there is evidence that coaching may support parents in increasing their skills, the research on how to do so is still developing. A discrete list of coaching practices has emerged from the early childhood parent coaching literature (McWilliam, 2010; Powell & Dunlap, 2010; Rush & Shelden, 2011); however, further studies are needed to identify specific coaching practices that are suitable for FA-based parent intervention programs. Research has been done on specific methods of providing feedback (which is a major component of coaching). Different methods for providing performance feedback have been used, such as video feedback, visual feedback, and verbal feedback. Video feedback has been shown to be effective (Fukkink, 2008) but is resource intensive. Verbal feedback is the simplest method for providing performance feedback, and this study

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provides evidence on the effectiveness of using it to support parents in reaching fidelity. Further investigation is needed to identify effective and efficient coaching practices.

The findings from this study are particularly significant because challenging behavior has been associated with peer rejection, depression, delinquency, school dropout, and adolescent emotional/behavior disorder (e.g., Dunlap et al., 2006; Webster-Stratton, Reid, & Hammond, 2001). Parent training is a key intervention for decreasing young children's challenging behavior (Brookman-Frazee et al., 2006) and increasing parents' confidence and capacity in addressing these behaviors in home settings (e.g., Graf et al., 2014; Koegel, Bimbela, & Schreibman, 1996). Although it is understood that parent training can benefit both parents and children, research continues to assess the variables associated with the most effective parent training practices. The current study extends the literature by adding support for a specific parent training model and the use of coaching.

Limitations and Future Research

The present study assessed the effectiveness of one type of parent training coupled with a specific type of coaching. Future research should continue to evaluate individual parent training variables. Even though research supports the overall effectiveness of parent training (Brookman-Frazee et al., 2006), research continues to evaluate specific variables associated with the most effective and efficient methods of parent training delivery. Parent training programs that are particularly promising for promoting skill acquisition and maintenance include a coaching or feedback phase (Joyce & Showers, 2002). However, more research is needed to understand the specific coaching practices that are effective and efficient.

In addition to understanding the key variables associated with effective parent training, future research is encouraged to evaluate the long-term effects of parent training and coaching. The current study involved follow-up observations but only for a short period of time. It is important to evaluate whether or not parents are able to use the strategies they learned in the long term once support has ended. Often, it is not feasible for most parent training programs to include long-term support due to time and resources available. Therefore, programs must provide parents with the tools (e.g., self-monitoring implementation checklist, online/e-coaching support) they need to continue utilizing the strategies they learned during parent training long after the training has been completed.

Relatedly, assessing if parents are generalizing the skills they learned to other routines and are able to create new behavior support plans to address newly observed problem behaviors could inform future parent training program development. Specifically, it would be beneficial to identify specific elements of parent training that promote generalization to incorporate those elements into parent training programs. Many parent training programs target skills that could be used in a variety of settings and across many different behaviors. If parents learn how to generalize what they have learned, the impact of the parent training will be greater, and parent training will become more cost effective than if parents only use what they have learned within a limited context.

Although operational definitions of challenging behaviors were clearly defined in this study, all challenging behaviors were aggregated for analysis. Perhaps further examination of trends and patterns of different challenging behaviors might yield interesting associations between specific strategies and behaviors. Another limitation is that the behavior support plan and coaching and data collection/analysis for feedback were conducted by the researchers. Although the researchers designed the intervention and coaching procedures to be compatible with what an early interventionist typically does, the data collection and analysis could potentially require typical practitioners to have training beyond what is typical. Future research could evaluate similar coaching/feedback procedures with practitioners as the implementers. Finally, only two of the three parents returned their social validity questionnaire. Having all three questionnaires would have provided more information on acceptability and feasibility for all parent participants.

Conclusion

This study provides evidence to the growing body of research on the use of PBS and FA-based parent intervention in reducing young children's challenging behaviors. This study demonstrates an effective, family-centered, and natural routines-focused intervention model in addressing challenging behaviors. The findings of this study also provide significant implications for future research in areas of implementation and intervention fidelity and identifying effective coaching practices for FA-based intervention. Although additional replication is warranted to address the questions of maintenance and generalization of the intervention, these data offer promising support for practitioners to use FA-based parent intervention as an intervention program for families and their young children.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This

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research was made possible in part by a grant from the Institute of Education Sciences (R324B090005) awarded to Frank Porter Graham Child Development Institute at the University of North Carolina at Chapel Hill (PI: Odom).

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