

Implementation of Positive Behavior Support With a Sibling Set in a Home Environment

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This study provides a demonstration of the process of positive behavior support (PBS) within a home setting to address the challenging behavior of a sibling set within family routines. Although a growing data base is demonstrating the feasibility and effectiveness of conducting functional behavioral assessment and implementing assessment-based interventions for young children in family contexts, the vast majority of these studies have focused on dyadic parent-child interactions. The presence of more than one child, particularly when all children display challenging behaviors, can amplify levels of parent stress and complicate the logistics of assessment, planning, and systematic intervention. In this study, three young children presented challenging behaviors that were highly disruptive to home routines. Functional assessments were followed by implementation of multicomponent, family-centered PBS plans individualized to four activity routines. Multiple-baseline across-routines and quasiexperimental (A-B) within-routines designs demonstrated promising effects of the interventions in reducing aggregate levels of challenging behavior.

Keywords: *positive behavior support; home setting; young children; procedural fidelity; sibling set; challenging behavior*

Challenging behaviors exhibited by young children have attracted increased attention in the applied research literature (Conroy, Dunlap, Clarke, & Alter, 2005). This is appropriate, as there is an escalating understanding and appreciation of the dire consequences that can result from a failure to resolve challenging behaviors before they become resistant patterns of antisocial behavior (Shonkoff & Phillips, 2001). In particular, there is growing recognition that persistent challenging behaviors in early childhood are associated with subsequent problems in socialization, school adjustment, and furthermore, educational and vocational adaptation in adolescence and adulthood (e.g., Campbell, 1995; Dishion, French, & Patterson, 1995; Kazdin, 1985; Reid, 1993). Numerous authors as well as official reports have noted the importance of identifying, preventing, and resolving challenging behaviors in young children as early in their development as possible (Dodge, 1993; New Freedom Commission on Mental Health, 2003; Shonkoff & Phillips, 2001; Walker, Zeller, Close, Webber, & Gresham, 1999).

In response to this increased awareness, researchers have sought interventions that can be effective in preventing and resolving the challenging behaviors of young children. A

considerable amount of data supports the use of behavioral strategies to intervene with serious behavior problems of toddlers and preschoolers (Conroy et al., 2005; Dunlap, Strain, et al., 2006). In particular, positive behavior support (PBS), including the use of functional assessments and assessment-based interventions, has been shown to be an effective intervention approach for young children with challenging behavior within their natural routines (e.g., Blair, Umbreit, & Bos, 1999; Blair, Umbreit, & Eck, 2000; Duda, Dunlap, Fox, Lentini, & Clarke, 2004; Dunlap & Fox, 1999; Moes & Frea, 2000).

For young children, including children with developmental challenges, the most essential context for social and behavioral development is that of the family (Dunlap & Fox, 1999; Erwin, 1996; Singer & Irvin, 1989; Turnbull & Turnbull, 2001). Accordingly, attention has been paid to delivering interventions and supports in home settings with family members as intervention agents (Lucyshyn, Dunlap, & Albin, 2002). For instance, Koegel, Stiebel, and Koegel (1998) helped parents of preschool-age children with autism conduct assessments and home-based interventions to reduce aggression toward younger siblings. The individualized, multicomponent support plans were shown to be effective in eliminating the children's aggression. Similarly, a number of authors have taught and guided parents to use functional communication training (FCT) with young children to reduce levels of disruptive and destructive behaviors (Andorfer, Miltenberger, Woster, & Rortvedt, 1994; Derby et al., 1997; Dunlap, Ester, Langhans, & Fox, 2006; Wacker et al., 1998). These investigations have demonstrated that parents can learn to use FCT and other assessment-based intervention strategies and that the procedures can be effective in managing children's challenging behaviors (Conroy et al., 2005; Lucyshyn, Dunlap, et al., 2002).

Results from studies involving the delivery and evaluation of PBS interventions conducted with families in a home-based setting are encouraging; however, the generality of the findings to the complex circumstances of everyday living is always a question (Dunlap, Fox, Vaughn, Bucy, & Clarke, 1997; Lucyshyn, Horner, Dunlap, Albin, & Ben, 2002). In the majority of studies of interventions in home (and other) settings, the situations under which data are collected are carefully scripted, with clear boundaries defining the timing, location, and social conditions in which the study is to occur. This is fully understandable, as variation produced by nonintervention influences needs to be reduced to isolate and reveal the effects of the independent variable under examination. Nevertheless, parameters of home-based experimentation inevitably leave open important questions regarding the ability of parents to implement procedures under the normally prevailing complexities of everyday living.

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One aspect of this complexity is that many families include more than one child, and the interactions of multiple children can serve to increase the difficulties of designing and delivering interventions. The difficulties can be exacerbated when more than one child exhibits challenging behaviors in need of remediation. In this respect, our analysis of the existing intervention literature indicates that essentially all of the published reports of home-based interventions were conducted in the context of dyadic interactions between one parent and one child (Asmus et al., 1999; Derby et al., 1997). To our knowledge, there have been no experimental analyses of parent-implemented interventions for simultaneously occurring challenging behaviors exhibited by more than one child in a family within the same naturally occurring routines.

The purpose of the present study was to examine the use and associated outcomes of the PBS process implemented by a mother who was concerned about the behavior challenges presented by all three of her young children. The investigation was conducted to examine the effects of multicomponent interventions conducted by the parent within routine family activities. The participating family included twin boys who were 34 months of age and their 5-year-old sister, all of whom had problem behaviors that were a concern to the mother and father. The interventions were individualized to address the needs and characteristics of the children within the routines, they were assessment based, and they comprised multiple components in concordance with current perspectives in PBS (Bambara & Kern, 2005; Lucyshyn, Dunlap, et al., 2002).

Method

Participants

The participants in this study were a mother, Ms. Amos; her 5-year-old daughter, Emmy; and 34-month-old fraternal twin sons, Max and Zak (all pseudonyms). The three children lived with both parents in a single-family residence in central Florida. The family was European American. The father was a college graduate and was employed as an attorney, and the mother was a college graduate who stayed at home as a homemaker. The family initially expressed concern with the development of their son, Max, who had a history of failure to thrive, feeding difficulties, and expressive language delays. In addition, Max demonstrated a wide variety of challenging behaviors, such as tantrums, hitting, biting, throwing toys, excessive crying, noncompliance, and running away. Max was receiving speech and language services through a local early intervention program and was referred for participation in a university research and demonstration program that provided PBS for young children and their families. At 32 months of age, evaluations indicated the presence of both language delays and challenging behavior, the former measured by the Developmental Assessment of Young Children (Voress & Maddox, 1998; General Development Quotient standard score = 85; communication domain age equivalent = 24 months) and the latter by a combination of the Child Behavior Checklist (Achenbach & Rescorla, 2000; *T* score = 54; clinical range), parental reports, and behavioral observations.

During initial visits to the family's home, the first author observed that Max's two siblings also demonstrated challenging behavior. Max's fraternal twin brother, Zak, frequently

engaged in hitting, food dumping, spitting, biting, noncompliance, throwing toys, and excessive crying; and his older sister, Emmy, was observed hitting and pushing her brothers, throwing objects, using verbal threats with her brothers and mother, crying, screaming, kicking, and arguing with her mother. The children's mother expressed ongoing frustration with the behavior management of all the children and requested advice on how to address their behavior challenges. As a result, all three of the children were considered focus participants. Because Zak and Emmy were not formally referred for special education or other therapeutic services, no formal test scores were obtained.

Routines

The initial activities in the development of the PBS plan included home visits to establish family rapport, gain knowledge about the family system and routines, and assess the nature of the referred child's behavior challenges. The mother identified several routines where she felt the children's behavior was "out of control" and in which she was unable to intervene effectively. These regularly occurring routines were selected as the contexts in which assessment and intervention would be conducted. All of the routines occurred during the day or early evening while the father was at work; thus his involvement in the intervention process was limited. The routines included *twin play*, which was a play period with just Max and Zak; the *cleanup* routine that immediately followed the twin playtime; *all play*, which was a play period with all three children; and the family's *dinner* routine. Max and Zak participated in each of the four routines, and Emmy participated in both the all-play and dinner routines. The twin-play and cleanup routines both occurred daily, during the late morning in the family room of the home. The all-play and dinner routines were completed daily in the late afternoon after Emmy came home from school. All play was also originated in the family room, with dinner following at the dining room table. During the play and cleanup activities, the children were expected to play independently while Ms. Amos was in the adjacent room doing household chores although close enough to hear and see the children.

General Procedures

After the mother's concerns were identified, comprehensive behavior support plans were developed for each specified routine. The plans were collaborative efforts between the mother and project staff and were guided by the family's goals, the needs of all three children, and functional assessment data. All direct interactions with the family were conducted by a project specialist (the first author), who was an advanced doctoral student at the time of the study. Multicomponent intervention plans were customized to fit within the context of each routine, each consisting of a combination of prevention strategies (e.g., antecedent modifications, choice making, clear expectations), parent responses, and skill-building interventions (e.g., compliance with expectations, play skills, self-monitoring). After brief periods of coaching, each support plan was implemented by the mother until stable rates of behavior change were obtained. The process of PBS used in this study was consistent with the general process that has been described extensively in the literature (e.g., Carr et al., 1999; Dunlap, Foster-Johnson, Clarke, Kern, & Childs, 1995; Koegel, Koegel, & Dunlap,

1996; Lucyshyn, Horner, et al., 2002). The PBS procedures included establishing a family partnership, functional assessment, support plan development, and intervention, which are described below.

Family partnership. The first step was to develop rapport with the family, gain information about the family system and the parents' goals for their children, and establish how the project specialist would work in partnership with the family. Initial family meetings were used to introduce the PBS model, describe its elements, develop goals for each child, identify the routines where there were behavioral concerns, and agree on roles assumed by each person in the behavior support process. Through these meetings, the family gained an understanding of the process of PBS, reached consensus on the behaviors and activities they wanted to address, and agreed that the mother would serve as the primary intervention agent in implementing the behavior support plans.

Functional assessment. The second step of the process involved conducting individualized functional assessments for Max, Zak, and Emmy across the targeted routines. Multiple sources of data were obtained in each assessment to document patterns of each child's challenging behavior. The data sources included anecdotal behavioral observations, systematic behavioral observations across times and routines, records reviews (e.g., including pertinent behavior rating scales previously administered for Max), and informal and semistructured interviews with Emmy and her mother, including a slightly modified version of the Functional Assessment Interview (FAI; O'Neill et al., 1997). The modifications to the FAI included eliminating references to routines and activities related to older children and adults and the addition of questions related to play and the routines of young children.

The information yielded by the assessment process suggested a number of conclusions relevant to the design of interventions. First, it was clear that the routines were characterized by a lack of structure. It was difficult to discern the presence of behavioral expectations for the children, and the mother's interactions were generally irregular. Furthermore, rates of praise and positive feedback were low, and the mother's response to challenging behaviors tended to consist of stopping her activity, consoling her children, occasionally redirecting the children's activities, or withdrawing demands or requests she may have issued. In addition, the functions of the children's challenging behavior seemed to vary across and within routines. For twin play, the prominent function for both Max's and Zak's challenging behaviors appeared to be mother's attention. On occasions when the boys demonstrated challenging behavior, their mother consistently elected to stop her activity, come into the room, and console her two children. Within the cleanup routine, two different functions emerged. For both boys, challenging behavior seemed to occur to extend the play period and also to avoid the requirements of cleaning up (putting toys away). The functions of challenging behavior during the all-play routine appeared to be the same as twin play (i.e., challenging behavior occurred to recruit mother's attention). During this routine, Emmy's challenging behaviors included instances where she would instigate her brothers' challenging behaviors. For example, Emmy would instruct her brothers to throw food, tease them, take away their toys, or tell them to say curse words. Emmy's challenges also seemed to occur to recruit mother's attention, regardless of whether that attention took the form of consolation or reprimands. Finally, the children's challenging behavior during

the dinner routine was hypothesized to both obtain their mother's attention and enable escape from nonpreferred food items or the dinner routine itself. The escape function was particularly evident for Zak, who threw or dumped his food or beverages to escape nonpreferred food or to leave the area.

Design

The primary experimental design used in this investigation was a multiple-baseline across-routines design. This design was used to evaluate the effects of the multicomponent assessment-based PBS intervention plans on challenging behaviors and engagement exhibited by the children. The multiple-baseline across-routines design provides data on the engagement and challenging behavior displayed by Max and Zak in all four routines and the composite challenging behavior experienced by the mother when an occurrence of challenging behavior occurred regardless of which child demonstrated the behavior. Although the daily routines followed a natural sequence of twin play followed by cleanup, because of the high levels of challenging behaviors displayed during cleanup, Ms. Amos requested to receive assistance with the cleanup routine first.

The implementation of the multiple-baseline across-routines design entailed three sessions of baseline for a first routine, cleanup, at which time intervention was introduced in this routine. Meanwhile, baseline was continued for the remaining three routines. After an effect was observed for cleanup, intervention was introduced for twin play. Then, following additional baseline sessions for the remaining routines and after a reduction in challenging behavior was observed in twin play, intervention was introduced simultaneously for the all-play and dinner routines. In this manner, an experimental multiple-baseline design was implemented for the children's composite challenging behavior as well as individually for Max and Zak.

The effects of intervention on Emmy's behavior were evaluated with two A-B quasiexperimental designs because she participated only in the all-play and dinner routines.

To assess the durability of the interventions, three follow-up probe observations were conducted (within the course of a week) 4 months following the conclusion of the formal intervention condition. In conducting these observations, the parents were asked only to engage with the routines as they had been since the formal intervention sessions were concluded.

Baseline. All baseline and intervention sessions were videotaped by the first author using a portable camcorder. Prior to baseline, the first author used the portable camcorder to observe the routines for a minimum of five sessions to allow the family to acclimate to the presence of the camera. During baseline, Ms. Amos was encouraged to begin and end the routine in the manner that was typical for the family and was asked to indicate the starting and ending point for each routine. For example, Ms. Amos determined that the start of twin play occurred when she left the room and reminded the boys to play together and ended when she returned from doing her chores. Dinnertime began when she said, "Time for dinner, please come to the table," and ended when the last child was excused from the meal.

Twin play occurred with both boys midmorning in the family room. For the purpose of the study, data were collected consistently for the first 15 min of the play routine. The

expectation for twin play was that the twins would play independently with a limited number of toy sets for 15 min with no disruption (e.g., aggression, crying). The toys were limited to a maximum of four toy sets during this routine. Each boy would select one toy set that he would like to play with, then Ms. Amos would select two more toy sets for the boys to play with. One of Ms. Amos's selected toy sets would be used to merge the play themes of the selections the boys made, and the fourth set was used as a backup, in case either child got bored with the sets they had access to. After Ms. Amos completed her chores (e.g., folding clothes), twin play ended with the beginning of cleanup. The expectation for the cleanup routine was that the twins would put away the toys with the assistance of their mother. The cleanup routine lasted from 5 to 12 min. The two other routines occurred later in the day, when Emmy returned from school. The all-play routine occurred in the family room and ranged from 19 to 37 min. Behavioral data were recorded for the first 20 min of routine, as the children were expected to play together for 20 min without disruption while Ms. Amos was in the adjacent kitchen preparing dinner. This routine ended with the beginning of dinner, which was prompted by Ms. Amos's signaling to the children that dinner was ready. Dinner usually lasted from between 12 and 22 min, with data collected for the entire length of the dinner routine (e.g., until all three children were excused from the table). Dinner followed the same sequence every day. All of the children were expected to stay seated, use utensils, and request permission before leaving the table. Dinner began with a prayer led by one of the children. After the family finished their prayer, they would all say, "Enjoy your dinner," and begin eating. All routines had a minimum of three baseline sessions, with the number staggered to accommodate the multiple-baseline design.

Intervention procedures. Interventions were developed in collaborative discussions with Ms. Amos. The hypotheses drawn from the functional assessments served as the primary guide to the development of intervention plans. In addition, consistent with a multicomponent PBS approach, an effort was made to build structure and clear expectations into each routine and to include in each a combination of prevention strategies, parent responses, and skill instruction. Intervention plans were customized to fit within the context of each routine, and the parents were encouraged to include components that they believed might be effective and, in particular, feasible. As components were identified, they were incorporated into each routine as scripts or a sequence of steps. A time limit that was consistent and developmentally appropriate was also established for play routines. The steps developed for each routine are shown in Table 1. Additional description is provided below.

Twin play. Within the twin-play routine, prevention strategies were selected for use in promoting engagement and preventing occurrences of challenging behavior. Specifically, both Max and Zak were given a choice of toys to use during the routine, the activity was structured through the use of cues signaling the beginning and end of the routine, the length of the play session was set at 15 min, toys were selected to fit the routine (i.e., multiple versions of the same toy were provided, toys were selected for their ability to be used without need for parental involvement), and clear, age-appropriate expectations were used. With respect to parent responses, the mother provided high rates of noncontingent specific praise to each of the boys, ignored occurrences of challenging behavior, and provided redirection to her children using the expectations for the activity. The purpose of these strategies was

Table 1
Intervention Steps for Routines

Twin Play Intervention Steps	Rationale
1. Ms. Amos states expectation to play independently while she is out of the room.	Prevention: Expectation of behavior clearly stated.
2. Each child is given a choice for one toy set.	Prevention: Preference and choice used to increase the reinforcement value of play routine and reduce desire to access parent attention.
3. Ms. Amos provides an additional two toy sets.	Prevention: Expanded option of toys to promote independent play and decrease the need to access attention.
4. Verbal prompt given to each boy to take the toys in the family room.	Prevention: Expectation of behavior clearly stated.
5. Each child is praised for bringing out toys.	Reinforcement: Provide attention for following expectation.
6. Ms. Amos states a play theme or asks children to identify what they will play.	Instruction: Prompt for independent play.
7. Once the boys begin playing, Ms. Amos tells the boys that she is leaving the area and states expectation for them to play.	Prevention: Expectation of behavior clearly stated.
8. Provide praise to both boys while remaining in kitchen or out of area every 5 min.	Reinforcement: Provide positive attention contingent on meeting expectation.
9. After 15 min have passed, praise boys and give a verbal warning that playtime is almost "all done."	Prevention: Cue to prompt end of activity and upcoming transition. Reinforcement: Provide positive attention for meeting expectations.
Cleanup Intervention Steps	Rationale
1. Ms. Amos gives a 4-min warning to each child using a representative photo, followed by a 1-min warning.	Prevention: Transition cue to provide boys with information about end of activity.
2. All done with previous activity (play) and time to clean up clearly stated.	Prevention: Cue to prompt end of activity and behavior expectation.
3. Ms. Amos provides Zak with the opportunity to choose song or character for cleanup activity.	Prevention: Preference and choice used to increase the reinforcement value of the activity and reduce desire to escape.
4. Ms. Amos plays <i>Dragon Tales</i> song on CD player.	Prevention: Preference used to increase the reinforcement value of activity; music provides audio cue for routine.
5. While cleaning, Ms. Amos counts number of toys Zak and Max put in the box individually.	Instruction: Prompt for expected behavior.
6. Individual praise is given to Zak and Max for picking up toys. When song is over, or goal is reached, it is celebrated (e.g., praise, high fives).	Reinforcement: Provide attention for meeting behavior expectations.
7. Ms. Amos gives verbal cue that clean up is over (i.e., "all done").	Prevention: Cue to prompt end of activity.
8. Zak and Max are given choice of reinforcer (<i>Dragon Tales</i> badge).	Reinforcement: Provide reinforcer for meeting expectations.
All-Play Intervention Steps	Rationale
1. Prior to playtime, all-play "Social Story" is read to Emmy.	Instruction: Teach the rules of routine to Emmy with story script and visuals. Prevention: Provide Emmy with attention for participation in routine.

(continued)

Table 1 (continued)

All-Play Intervention Steps	Rationale
2. Ms. Amos gives clear verbal cue of what is going to happen and expectation that children will play independently while she is out of the room.	Prevention: Expectation of behavior clearly stated.
3. Each child is given a choice for one toy set, then Ms. Amos selects an additional toy set that is preferred for all three children. Children prompted to take toys into family routine.	Prevention: Preference and choice used to increase the reinforcement value of play routine and reduce desire to access parent attention. Limited toy sets promote child independent play and request for parent attention.
4. Ms. Amos praises children for bringing out toys.	Reinforcement: Provide attention for meeting behavior expectations.
5. Ms. Amos reviews rules with Emmy, and Emmy has access to "rule list."	Instruction: Instruction of expectations of the routine.
6. Ms. Amos or Emmy gives suggestions to boys for toy play activity.	Prevention: Provides opportunity for Emmy to use helping behavior.
7. After each child picks up first set of toys, Ms. Amos tells children that she is leaving the area and that Emmy will help.	Prevention: Expectation of behavior clearly stated.
8. During playtime, Emmy is instructed by Ms. Amos (e.g., Emmy receives verbal guidance from Ms. Amos as she works in the kitchen) on prompting and/or teaching brothers how to use toys as well as praising her brothers.	Instruction: Teaches the expectations of routine and creates opportunities for appropriate interactions between Emmy and her brothers. Reinforcement: Provides positive attention to Emmy.
9. Ms. Amos provides praise to children while remaining in kitchen or out of area every 5 min and specific praise to Emmy for being a "helper."	Reinforcement: Provide attention for meeting behavior expectations.
10. After 20 min have passed, Ms. Amos praises children and gives a verbal warning that playtime is almost "all done."	Prevention: Cue to prompt end of activity and upcoming transition.
11. At the end of play activity, Ms. Amos asks Emmy if everyone followed the rules and how she played.	Reinforcement: Provide positive attention to Emmy and restate expectations of routine.
Dinner Intervention Steps	Rationale
1. Ms. Amos provides several materials (dinner Social Story, self-monitoring materials, and choice menu) to Emmy prior to dinner.	Instruction: Teach the rules of routine to Emmy with story script and visuals.
2. Emmy is given opportunity to read book herself or read to the boys to review dinner rules.	Prevention: Teach the rules of routine to Emmy with story script.
3. Emmy is given opportunity to help set the table and/or put food on table.	Prevention: Provide Emmy with attention for participation in routine.
4. Prior to children's sitting down, dinner is completely prepared and on the table.	Prevention: Ms. Amos does not have to leave the table during meal and can provide children with positive attention. Provides a visual cue that dinner is about to begin.
5. Seating arrangement is modified to let Emmy sit next to Ms. Amos.	Prevention: Emmy is placed next to mother to access more attention for appropriate behavior and away from brothers.
6. Choice of two food items is provided to children (one preferred item, one backup).	Prevention: Preference and choice used to increase the reinforcement value of dinner.

(continued)

Table 1 (continued)

Dinner Intervention Steps	Rationale
7. If child or children refuse to eat after choice is given, child or children are instructed they must sit at the table for 5 min.	Escape extinction: Children not allowed to leave table following refusal to eat or inappropriate behavior.
8. Ms. Amos sits with children for entire duration of mealtime.	Prevention: Ms. Amos does not have to leave the table and can provide each child positive attention.
9. Ms. Amos follows child's lead for dinner conversation.	Reinforcement: Attention provided for appropriate behavior.
10. Specific praise is provided to boys throughout dinner for following rules and to Emmy for appropriate behavior and self-monitoring.	Reinforcement: Provide positive attention contingent on meeting behavior expectations.
11. Each child individually asks to be excused or Ms. Amos gives permission to leave table after child is finished with dinner.	Reinforcement: Provide positive attention contingent on meeting behavior expectations.
12. After dinner is over, Ms. Amos matches self-monitoring with Emmy.	Instruction: Teaches the rules of routine to Emmy with visual cue, teaches Emmy to reflect on own behavior.
13. Ms. Amos provides reward choice menu for Emmy if she matches with Ms. Amos and has more than 80% appropriate behavior.	Reinforcement: Emmy is given one to one positive attention from Ms. Amos and access to a menu of preferred items.
14. Ms. Amos sets up a video for the boys and immediately starts "Mommy and Emmy time."	Prevention: Video occupies boys while Emmy engages with her mother.

to teach Max and Zak both to engage in independent play and to follow age-appropriate expectations.

Cleanup. Multiple prevention strategies were embedded within the cleanup routine. First, visual cues were provided by the mother during transitions to cue the beginning and end of the activity. Next, the mother structured the activity by delivering a clear, age-appropriate expectation to the children (e.g., "It's time to clean up"). Last, a preferred theme was incorporated into the activity via music and reinforcement tokens (e.g., *Dragon Tales* characters, *Dragon Tales* badges). Relative to parent responses, Ms. Amos provided high rates of specific praise for occurrences of engagement, ignored occurrences of challenging behavior, and provided redirection to her children using the expectations for the activity. Consequently, both Max and Zak were taught how to both clean up after playing with their toys and follow age-appropriate expectations.

All play. During the all-play routine, prevention strategies were used to promote Max's, Zak's, and Emmy's rates of engagement. Similar to the previous two routines, choice of toys, structure (i.e., a clear beginning and end), toy selection (relative to quantity and ability for independent usage), noncontingent specific praise, and clear expectations were incorporated. Likewise, Ms. Amos also used ignoring and redirection to manage challenging behavior. However, because Emmy participated in this routine and the team identified that she tended to instigate her brothers to exhibit challenging behavior, an expectation was

set where Emmy would serve as helper to her mother and learn “big-sister skills” (e.g., prompting, praise, nonverbal imitation). The purpose of this strategy was to not only provide Emmy with more opportunities to receive specific praise but also to have her learn the rules for playtime and to learn how to lead activities with her younger brothers.

Dinner. Several prevention strategies were embedded within dinner, the final of the four routines selected for this study. First, a fixed seating arrangement was used to prevent occurrences of challenging behavior (e.g., the mother remained seated at the table, Emmy was seated next to Ms. Amos). Second, Ms. Amos initiated the dinner routine after food was completely prepared and placed on the table, thereby preventing the need for the mother to leave the area during the dinner routine. The third strategy was a backup food choice. Because Zak often attempted to leave the area to escape nonpreferred foods, a backup food choice was used to promote engagement for all children for the duration of the routine. Fourth, the mother elected to follow a consistent structure to the routine (e.g., following the same sequence of activities, such as saying a prayer before eating the meal, following child’s lead for topic of conversation). A high rate of specific praise was the fifth prevention strategy, whereas the sixth and final prevention measure entailed embedding Emmy’s preferences within the routine (e.g., preferred seating arrangement).

As reported across intervention routines, Ms. Amos used a combination of ignoring and redirection to manage challenging behavior. Unlike the other routines, however, an emphasis was placed on teaching self-monitoring. A self-management plan was developed for Emmy, with the goal of serving as a helper to her mother and taking the lead to initiate dinnertime activities when necessary (e.g., saying the dinnertime prayer, initiating conversation, providing praise to her brothers). At the end of the routine, Emmy and her mother independently evaluated her performance using a progress monitoring checklist and compared their ratings after dinner (i.e., the steps Emmy reported completing versus the number of steps Ms. Amos observed Emmy completing). Access to a menu of reinforcers was given on occasions when Ms. Amos and Emmy matched ratings on a minimum of 80% of the steps completed.

Coaching. Intervention procedures were described and modeled for Ms. Amos before the intervention condition by the project specialist. Ten minutes before the start of each intervention session, the project specialist provided positive feedback on the mother’s intervention efforts during the previous day’s session and reminders to reinforce the parent’s use of the intervention procedures. After completion of each intervention session, the session was reviewed with Ms. Amos, with discussion focused on how the routine went and the procedures that were used.

The intervention sessions were videotaped and scored by trained observers for occurrence of each dependent variable. A checklist of intervention components (Table 1) was used to indicate which components were used and which were not. These data were used by the project specialist to provide more specific feedback to the mother during the pre-session coaching.

Dependent Variables

The dependent variables in this study were engagement and challenging behavior. *Engagement* was defined as following the natural sequence of the routine or specified task instructions and was scored if a child was on task for at least 70% of interval as determined by observer judgment (Vaughn, Clarke, & Dunlap, 1997) and was scored as an occurrence

when the child was observed to be engaged within the routine for the majority of an observed interval. The majority of the interval was defined as 6 or more seconds during each 10-s interval. *Challenging behavior* was defined as any occurrence where the child exhibited inappropriate vocalizations (e.g., screaming, crying, whining), inappropriate social interactions (e.g., resisting), aggression (e.g., attempts and occurrences of hitting, kicking, biting, etc.), being out of area (i.e., any occurrence where the child leaves an assigned area, such as the dinner table or play area), inappropriate use of materials (i.e., using materials in a manner that is inappropriate or not what the object was intended for, such as spitting out food, throwing toys, jumping off tables, slamming doors), and noncompliance (i.e., refusal to follow instructions or directives for 5 or more seconds).

Engagement and challenging behavior were scored independently for each child. In addition, a measure was obtained for *composite challenging behavior*, which was defined as any occurrence of challenging behavior that occurred during an interval, regardless of which child demonstrated the behavior. Given the fact that the mother reported experiencing a high degree of distress from independently managing her children's challenging behavior for large portions of time, composite challenging behavior was coded as a means of documenting changes in challenging behavior as observed across all three children.

Data Collection

Each session for each routine was videotaped, and all data were obtained from the video recordings. Sessions were scored by trained data collectors using a 10-s continuous interval recording system. Each interval was scored for each dependent variable (engagement, challenging behavior) for each child participating in the session. The twins participated in the twin-play and cleanup sessions, and all three children participated in all play and dinner. Five data collectors were involved in all aspects of child behavioral data collection and were deemed trained to criteria after they demonstrated a minimum of 80% agreement for all coding procedures. These data collectors all possessed a minimum of an undergraduate degree, and all had previous experience with young children and challenging behavior.

Reliability

Estimates of interobserver agreement (IOA) were obtained by having two observers independently score the same session. IOA was scored for occurrence and nonoccurrence, and total IOA was scored for each operationally defined dependent variable for each child. Reliability was assessed on at least 33% of all videotaped sessions across all phases of the study and all three children. Reliability assessments were calculated by dividing the number of agreements by the number of agreements plus disagreements. These calculations were conducted for total agreement, agreement on occurrences, and agreement on nonoccurrences. Mean total agreement reliability for all dependent measures recorded exceeded 91% for each routine and condition.

Composite IOA data indicated that reliability was achieved at a level of 93% (range = 89% to 100%) for cleanup, 96% (range = 90% to 100%) for twin play, 97% (range = 93% to 100%) for all play, and 95% (range = 89% to 100%) for dinner. For individual participants, IOA was calculated for each child in each of the targeted routines. IOA calculations for Max across all four routines for engagement behavior always exceeded 95% total agreement, with

a range between 81% and 100%, and agreement for total challenging behavior reliability across the four routines were all greater than 91%, with a range from 89% to 100%. Total agreement calculations for Zak during all four routines for engagement always exceeded 94%, with a range of 94% to 100%, and total agreement for challenging behavior ranged from 89% to 100%. Interobserver total agreement calculations for Emmy across the two afternoon routines averaged 95% (range = 86% to 100%) for engagement and 95% (range = 90% to 100%) for challenging behavior.

Procedural Fidelity

To assess whether intervention components were implemented, procedural fidelity data were collected using the checklists of each intervention step for each routine (see Table 1). Data were obtained on the presence or absence of components that could be observed completely during sessions. In sessions where some components were not visible to the observer (e.g., because of video camera angle), procedural fidelity data were not coded. Fidelity data were summarized as the percentage of steps that were included during baseline compared to intervention sessions for each routine. For twin play, procedural fidelity data were obtained for all sessions during baseline and for 85% of sessions during intervention. The average percentage of intervention components implemented across the twin-play routines for baseline was 3%, as opposed to 86% during intervention. Procedural fidelity was collected in 100% of the baseline and intervention sessions in the cleanup routine. During cleanup, the average fidelity of implementation was 5% during baseline and 49% during intervention. For the all-play routine, procedural fidelity data were recorded for 71% of baseline sessions and 80% for intervention sessions. Average procedural fidelity of the intervention components was 8% across baseline sessions and 68% during intervention. In the dinner routine, procedural fidelity was obtained for all baseline sessions and for 80% of intervention sessions. During baseline, the procedural fidelity averaged 18% of component implementation, whereas the intervention sessions averaged 55% of components implemented.

Social Validity

To evaluate the acceptability, efficacy, and feasibility of the procedures and results used in this study, three parents of multiple preschool-age children were asked to observe a series of brief video segments for each routine. The parents were unaware of the purpose of the study or the experimental conditions but had been asked to watch a series of video segments of young children engaged in typical family routines and complete a rating sheet after watching each segment.

The video segments were selected by calculating the median level of challenging behavior that occurred across observations in each phase and selecting segments that represented the median level. After sessions were identified, the middle 60 s of the videotaped observation was selected for the social validation observation. This procedure minimized the bias that may have occurred in selecting the videos to show the social-validation raters. Two segments each for baseline and intervention were selected for twin play and cleanup, and one segment for each phase for all play and dinner were selected. After the segments were selected, they were randomly ordered for presentation to the social-validation raters.

Before viewing videotape segments for each routine, the raters were read a script that described the routine and the expectations for each activity. After viewing each segment, the raters were asked to provide ratings to statements describing the children's behavior, the mother's behavior, the specific intervention procedures, and their personal level of comfort implementing the specific intervention procedures. Ratings were obtained using a 5-point scale ranging from *strongly disagree* (a score of 1) to *strongly agree* (a score of 5).

Results

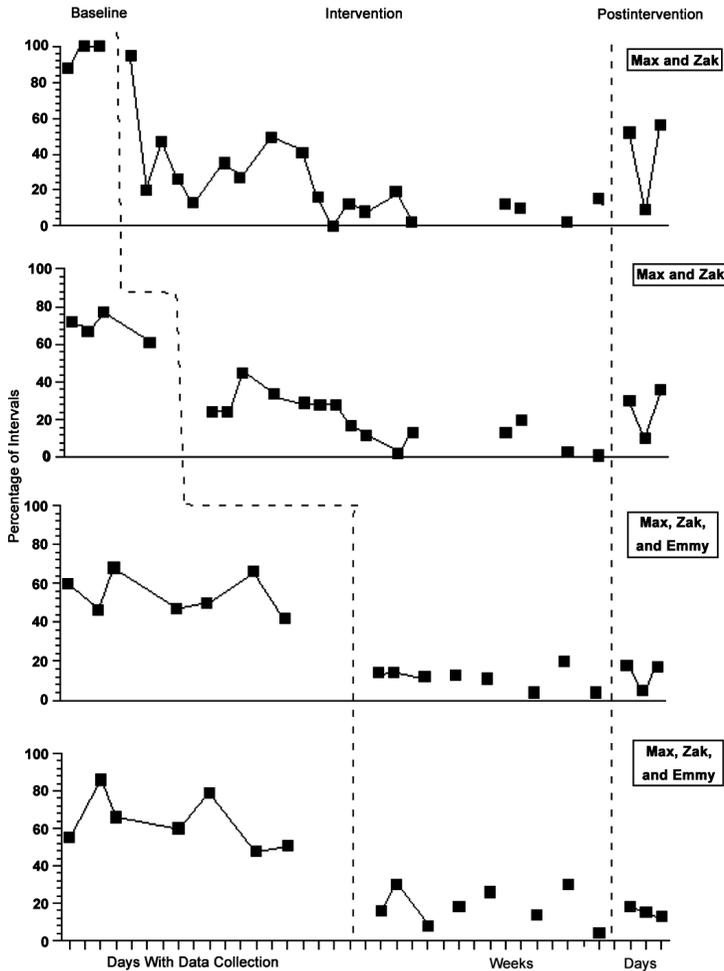
The first data display (Figure 1) shows the composite challenging behavior across the four routines with respect to the multiple-baseline across-routines design. This figure shows the percentage of intervals in each session that contained challenging behavior exhibited by any child. The first two graphs in the figure (cleanup and twin play) included Max and Zak, whereas composite behavior shown on the remaining two graphs (all play and dinner) included Max, Zak, and Emmy. Consecutive days with data collection within 1-week intervals are plotted on the abscissa. Gaps and extra spacing between data points reflect a number of variables when data could not be collected. These variables included naturally occurring events or factors that briefly prevented the contiguous collection of data because of illness of the children or family activities that prohibited engagement in the regular routines. On a few occasions, sessions were conducted only in the morning with the twins, as Emmy's after-school or early evening activities prohibited the observation of sessions later in the day.

This figure indicates that composite challenging behavior was reduced substantially when intervention was introduced in each of the four routines and that it remained at consistently reduced levels throughout the intervention phases. Although there was more variability in the follow-up data, particularly in cleanup and twin play, the mean levels of composite challenging behavior were markedly lower than baseline.

Data for the individual children are presented in Figures 2 through 4. Figure 2 shows data for Max in the same multiple-baseline design with two dependent variables, challenging behavior and engagement. Max's baseline in cleanup had very low levels of engagement and high levels of challenging behavior; however, the introduction of intervention rapidly altered these levels to produce high levels of engagement and lower levels of challenging behavior. This pattern persisted throughout the intervention phase and continued through the follow-up observations. The other three routines showed the same general pattern, though the magnitude of effect was considerably less. That is, intervention resulted in high levels of engagement and low levels of challenging behavior in all routines, but the contrast with baseline levels was not as pronounced as in the cleanup routine. The data for Zak are shown in Figure 3. Zak also exhibited more challenging behavior in the cleanup and twin-play routines than in all play and dinner. Intervention resulted in decreased levels of challenging behavior and increased engagement in the cleanup and twin play routines, with similar effects in all play and dinner.

Emmy's results are shown in Figure 4. As Emmy participated in only the all-play and dinner routines and interventions were implemented simultaneously in these routines, her data are displayed as two concurrent A-B designs. Nevertheless, in each routine, Emmy's levels of engagement and challenging behavior changed clearly and consistently in the desired directions. Her baseline levels were quite stable, and the onset of intervention produced

Figure 1
Percentage of Intervals With Composite Challenging Behavior
Across Each of the Four Targeted Home Routines for
Baseline, Intervention, and Postintervention Phases



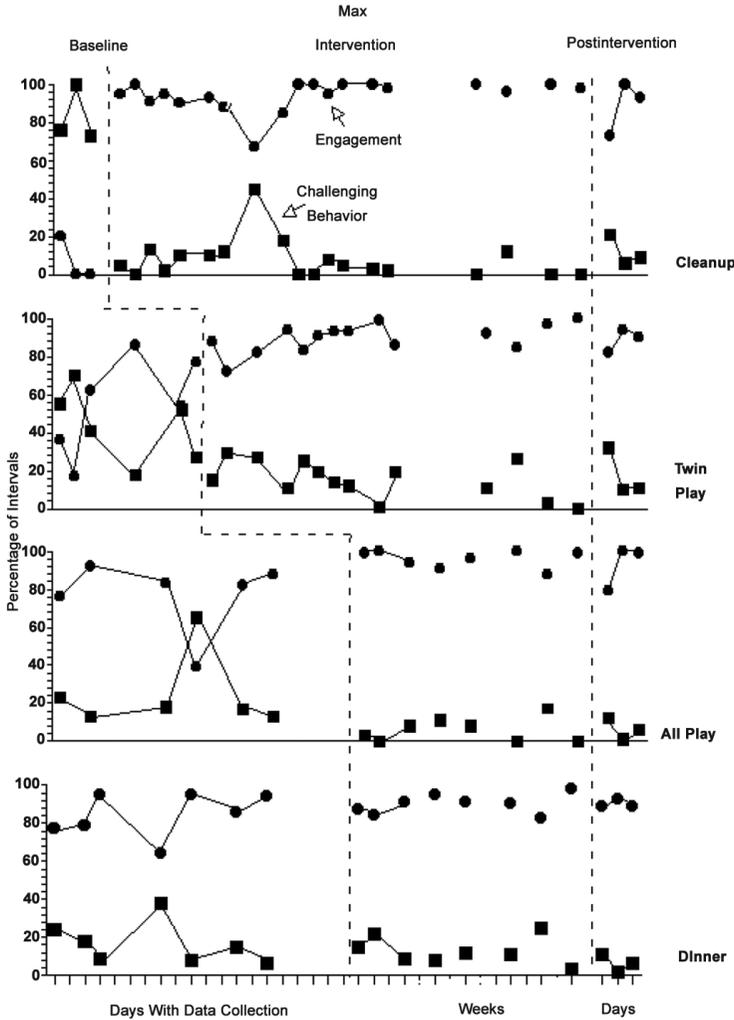
Note: The top two graphs represent percentage of intervals with challenging behavior exhibited by either Max or Zak. The bottom two graphs illustrate percentage of intervals with challenging behavior recorded for Max, Zak, or Emmy.

noticeably reduced levels of challenging behavior and elevated levels of engagement. These improved levels were sustained throughout intervention and follow-up phases.

Social Validity

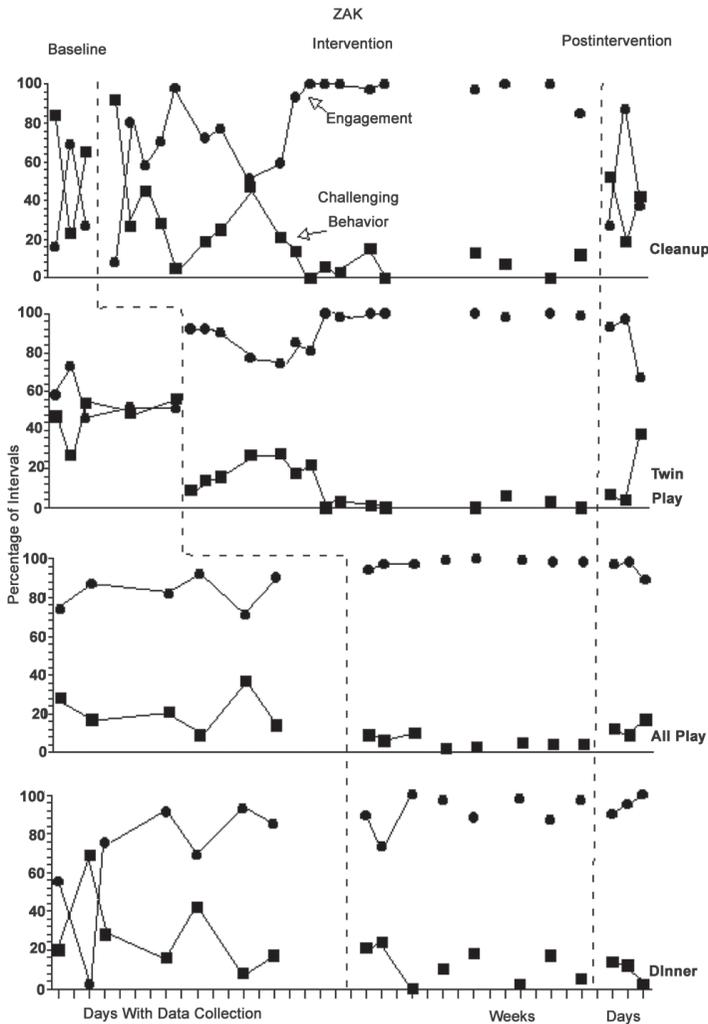
At the conclusion of the study, three parents of multiple preschool-age children provided ratings of baseline and intervention video segments to obtain social validation regarding the

Figure 2
Percentage of Intervals With Engagement and Challenging Behavior for Max Across the Four Targeted Home Routines for Baseline, Intervention, and Postintervention Phases



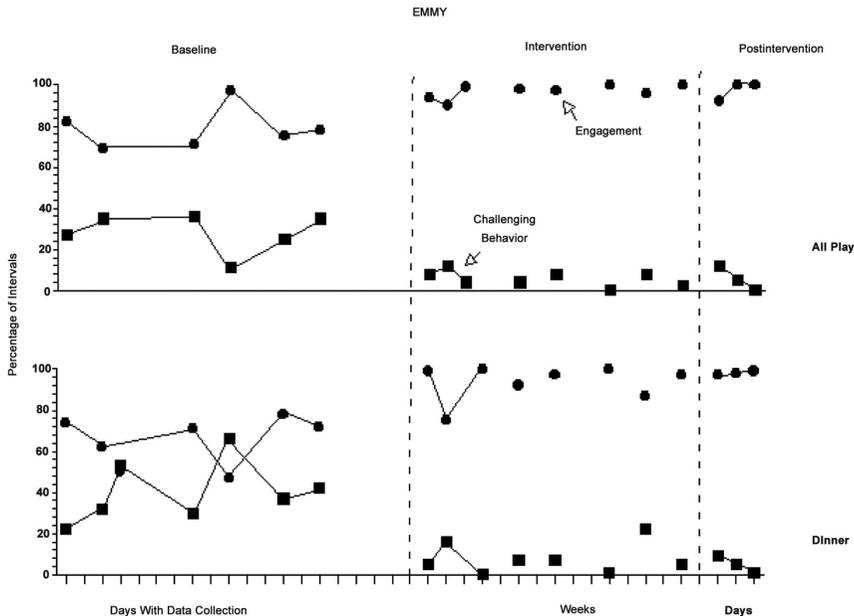
impact of the interventions on the children’s behavior, the parent’s behavior, and the observers’ level of comfort with intervention procedures. Three categories of questions were posed. They included (a) three questions related to the raters’ perspectives about the children’s behavior, (b) three questions related to the raters’ perspectives about the parent’s behavior, and (c) six questions about the raters’ perspectives about the intervention strategies evident on the video. The results of the social validations are shown in Tables 2 through 5. In these tables, the questions are presented (in abbreviated fashion), and the average score of the three raters is shown for each question and each routine.

Figure 3
Percentage of Intervals With Engagement and Challenging Behavior for Zak Across the Four Targeted Home Routines for Baseline, Intervention, and Postintervention Phases



Across all four routines, the parents consistently gave higher ratings to the intervention videotape segments. With respect to perspectives about children's behavior, parents consistently reported that the children's behavior was more appropriate and that children appeared to be more engaged and to enjoy the activity more during the intervention condition for each routine. Relative to parent behaviors observed across conditions, parent ratings indicated that the mother was better able to manage each child's behavior, appeared comfortable with the children's behavior, and appeared to enjoy the activity more during the intervention condition for each routine.

Figure 4
Percentage of Intervals With Engagement and Challenging Behavior for
Emmy Across the Four Targeted Home Routines for
Baseline, Intervention, and Postintervention Phases



With regard to perspectives about intervention procedures, higher ratings were obtained for the intervention video segments when parents were asked about intervention efficacy, children's positive responses to the strategies, the age appropriateness of the strategies, and the degree to which the strategies were easy to implement. Finally, the parent raters indicated they would feel more comfortable if the children displayed the types of behavior observed during the intervention segments and indicated they would feel more comfortable implementing the strategies used during the intervention conditions rather than those used during each baseline condition. Together, the social-validation data provide evidence that the children's behavior was more age appropriate, the mother's behavior management skills appear more effective, the intervention strategies were easy to use, and the parent raters would feel comfortable themselves using these strategies with their own children.

Discussion

The present investigation was conducted to evaluate the effects of interventions conducted by a parent in a home environment for multiple children with behavioral challenges. Four multicomponent PBS plans were implemented by a natural intervention agent (i.e., a mother), with each plan derived from functional assessments conducted within the family's natural

Table 2
Mean Ratings for Each Routine During Baseline and Intervention Conditions:
Perceptions Regarding Child Behavior

Routine	All Children's Behavior Was Appropriate		All Children in This Activity Were Participating		All Children Appeared to Enjoy the Activity	
	Baseline	Intervention	Baseline	Intervention	Baseline	Intervention
Twin play	2.3	4.8	2.2	4.7	2.2	4.8
Cleanup	2.0	4.8	1.3	4.5	2.2	4.2
All play	2.2	4.3	2.7	4.3	2.7	4.3
Dinner	1.3	4.7	1.3	4.7	1.3	4.7

Table 3
Mean Ratings for Each Routine During Baseline and Intervention Conditions:
Perceptions Regarding Parent Behavior

Routine	The Parent Managed All Children's Behavior		The Parent Appeared Comfortable With Children's Behaviors		The Parent Appeared to Enjoy the Activity	
	Baseline	Intervention	Baseline	Intervention	Baseline	Intervention
Twin play	2.7	4.8	3.2	4.8	3.2	4.8
Cleanup	2.5	4.3	2.8	4.5	2.2	4.5
All play	3.3	4.3	2.7	4.0	3.3	3.7
Dinner	1.7	4.7	1.7	4.7	1.7	4.7

Table 4
Perceptions Regarding Intervention Procedures

Routine	The Strategies Used Were Effective		All Children Responded to the Strategies Used		The Strategies Used Were Age Appropriate		The Strategies Used Were Easy to Implement	
	Baseline	Intervention	Baseline	Intervention	Baseline	Intervention	Baseline	Intervention
Twin play	2.7	4.8	2.3	4.3	3.8	4.8	4.0	4.8
Cleanup	2.0	4.7	2.0	3.8	4.5	4.8	4.3	4.8
All play	3.3	4.7	3.0	4.3	3.7	4.7	4.7	4.7
Dinner	2.3	4.7	1.3	4.7	2.3	4.7	2.3	4.7

environment. Efforts were made to ensure a high degree of contextual fit relative to both the ease of implementation and procedural fidelity over time (i.e., mother's involvement).

The results of the study showed that the interventions led to lower rates of challenging behavior and higher rates of engagement within each routine for each child and that these improvements appeared to be sustained across 3 months. Social-validation data supported the

Table 5
Perceptions Regarding Respondents' Comfort With Strategies

Routine	I Would Feel Comfortable if My Child(ren) Displayed These Types of Behavior in Similar Activities		I Would Feel Comfortable Implementing These Strategies With My Child(ren)	
	Baseline	Intervention	Baseline	Intervention
Twin play	3.5	4.8	3.5	4.8
Cleanup	2.8	4.3	3.8	4.3
All play	3.3	4.3	3.3	4.3
Dinner	2.3	5.0	2.3	5.0

conclusion that following intervention, the children's behavior was more age-appropriate, the mother's behavior management skills were more effective, and the intervention strategies were easy to use. Several contributions to the research base and implications for clinical practice are suggested.

The present study contributes to the existing PBS literature in several ways. First, the study provides an example of the application of PBS with a sibling set of preschool-age children and their parent. Although it is unusual for applied research to include as participants multiple children in a home environment, this is a relatively common and particularly challenging circumstance that needs to be addressed with further research and program development. Second, the study included a measurement strategy that was an attempt to consider the impact of challenging behavior from the parent's perspective. Specifically, it appeared that challenging behaviors demonstrated by three children (in many cases, simultaneously) in aggregate created a heightened level of disruption and parent difficulty (i.e., Fox, Vaughn, Dunlap, & Bucy, 1997; Fox, Vaughn, Wyatt, & Dunlap, 2002). The mother commented that she often experienced stress accruing from the combined impact of her children's behavior together. Although stress was not measured directly, a representation of the aggregation of challenging behaviors was produced by reporting challenging behavior as a composite index, as shown in Figure 1. Though each family is different, this strategy for measuring challenging behavior may be useful for further examining family stress, particularly when stressors appear to result from young children's exhibiting challenging behavior in the context of everyday routines and activities.

Finally, another contribution of the study is that it documented the utility of longitudinal, family-centered PBS consistently provided for almost a year (11 months). Results of the present study demonstrated maintenance of four multicomponent PBS plans implemented within natural family routines 9 months after the initial implementation of the intervention components. Though few studies prioritize maintenance, its assessment and analysis are critically important, as the effects of intervention are often trivial if they are not sustained beyond initial phases of implementation (Carr, Robinson, Taylor, & Carlson, 1990; Horner & Billingsley, 1988; Horner, Dunlap, & Koegel, 1988).

The data on procedural fidelity raise interesting prospects for future research. First, it is evident that baseline levels were quite low, which is not surprising because the intervention

components had not been delineated or recommended when baseline observations were conducted. Still, some of the components did occur during baseline because they are common incidental elements of parent-child interactions (e.g., Steps 9 and 11 in the dinner routine, following a child's conversational lead and excusing a child from the table). Second, it is interesting to note that fidelity of implementation varied considerably across routines and that some components were implemented much less often than others. To illustrate, for cleanup, Steps 2 and 5 were often not implemented during intervention, whereas the other components were implemented more than 60% of the time. During all play, Step 11 (reviewing the rule following with Emmy) was never implemented during intervention, and during dinner, Step 10 (delivering specific praise) was evident during only 10% of the sessions. These data logically raise questions about the reasons for lack of implementation of these items, especially because they were part of a collaborative plan and reminders were provided during the coaching sessions. They also raise questions about the functional importance of each of the components in the overall support plan. It is possible that all components were not essential for supporting child behavior change. These are questions that cannot be answered with the current data but may be addressed with future research that focuses on component analyses and variables that influence fidelity of implementation.

Some important aspects of the study may strengthen its relevance for practice. One such aspect is the use of natural intervention agents. The mother served as the intervention agent for each of the four routines, and she enlisted Emmy to assume such a role during the all-play and dinner routines. In this regard, the current study may serve as a useful example for practitioners interested in facilitating the PBS process with children and families within home environments. A second consideration is that the procedures emphasized the importance of the family context in developing behavior support plans that "fit" with the family's routines, activities, and priorities. Following suit with previously reported research findings and recommendations (e.g., Albin, Lucyshyn, Horner, & Flannery, 1996; Clarke, Dunlap, & Vaughn, 1999), the behavior support plans were implemented in natural contexts and across extended periods of time and were judged by relevant consumers to be effective and useful (Duda et al., 2004; Lucyshyn, Horner, et al., 2002). An additional and related implication pertains to family-centered practices. The current study was intended to be as family centered and collaborative as possible, thereby providing a potentially useful example of family-centered support practices (e.g., fostering collaboration, identifying the family's vision and goals, teaching the PBS process, designing streamlined behavior support plans directly linked to family goals). Similarly, the study offers a means by which to provide assessment and intervention related to a parent's perspective of his or her family's needs and priorities. Efforts were made to learn more about implementation from the parent's perspective (i.e., using a parent rating scale customized specifically to address parent perceptions of each intervention component's utility and preference for implementation over time, providing frequent opportunities for feedback). Not only does such a step make practical sense from the standpoint of support plan implementation, but it also communicates to the parent that a priority is placed on the degree to which the plan is a good fit relative to his or her family's preferences.

It is important to acknowledge the limitations in the present study. The first limitation pertains to external validity. Participants were from one family of five, so it is not possible to assume the results from this study would generalize to other families or other contexts (e.g.,

school or community). A second limitation is associated with measurement. It is possible that a degree of observer drift may have existed as a result of systematically coding behavioral observations over time. However, it is equally important to recognize that efforts to minimize these untoward effects were made, through both periodic review of operational definitions and IOA (via observer training prior to data collection and measurement of IOA per condition). Finally, it is possible that the presence of the project specialist served as a discriminative stimulus during the course of the research study. Given the fact that the first author was present to videotape all sessions and provided coaching to help the parent implement the components of the support plans, it is conceivable and possible that her presence may have served as a cue for the children's appropriate behavior. Though it is likely that the strength of the discriminative stimulus weakened over time because of the researcher's consistent presence and minimal interaction during videotaping, its presence as a potential limitation should be acknowledged nonetheless.

To summarize, the findings of this study lend support to the use of PBS as an effective intervention approach to provide families with effective strategies to address and resolve challenging behavior. The data add to a growing body of PBS research with young children, and they add new perspectives concerning families with multiple children. The findings also carry important implications for further research in a number of areas, including fidelity of implementation, strategies for developing multiple support plans, and measurement of composite behavior. The principal contribution of the study, however, may well be that it demonstrates an effective, family-centered, and family-friendly strategy for addressing the complex challenges of simultaneously occurring behavior problems exhibited by more than one child. It is hoped that dissemination of the current data will help inspire further efforts to understand and confront this important and prevalent concern.

References

- Achenbach, T., & Rescorla, L. (2000). *Child Behavior Checklist for ages 1-5*. Burlington, VT: ASEBA.
- Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual fit for behavior support plans. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support* (pp 81-98). Baltimore: Brookes.
- Andorfer, R. E., Miltenberger, R. G., Woster, S. H., & Rortvedt, A. K. (1994). Home-based descriptive and experimental analysis of problem behaviors in children. *Topics in Early Childhood Special Education, 14*, 64-87.
- Asmus, J. A., Wacker, D. P., Harding, J., Berg, W. K., Derby, K. M., & Kocis, E. (1999). Evaluation of antecedent stimulus parameters for the treatment of escape-maintained aberrant behavior. *Journal of Applied Behavior Analysis, 32*, 495-513.
- Bambara, L., & Kern, L. (Eds.). (2005). *Individualized supports for students with problem behaviors: Designing positive behavior plans*. New York: Guilford.
- Blair, K. C., Umbreit, J., & Bos, C. S. (1999). Using functional assessment and children's preferences to improve the behavior of young children with behavioral disorders. *Behavioral Disorders, 24*, 151-166.
- Blair, K. C., Umbreit, J., & Eck, S. (2000). Analysis of multiple variables related to a young child's aggressive behavior. *Journal of Positive Behavior Interventions, 2*, 33-39.
- Campbell, S. B. (1995). Behavior problems in preschool children: A review of recent research. *Journal of Child Psychology and Psychiatry, 36*, 113-149.
- Carr, E. G., Horner, R. H., Turnbull, A. P., Marquis, J., Magito-McLaughlin, D., McAtee, M., et al. (1999). *Positive behavior support for people with developmental disabilities: A research synthesis*. Washington, DC: American Association on Mental Retardation.

- Carr, E. G., Robinson, S., Taylor, J. C., & Carlson, J. I. (1990). Positive approaches to the treatment of severe behavior problems in persons with developmental disabilities: A review and analysis of reinforcement and stimulus-based procedures. *Monograph of the Association for Persons With Severe Handicaps, 4*.
- Clarke, S., Dunlap, G., & Vaughn, B. (1999). Family-centered, assessment-based intervention to improve behavior during an early morning routine. *Journal of Positive Behavior Interventions, 1*, 235-241.
- Conroy, M. A., Dunlap, G., Clarke, S., & Alter, P. J. (2005). A descriptive analysis of behavioral intervention research with young children with challenging behavior. *Topics in Early Childhood Special Education, 25*, 157-166.
- Derby, K. M., Wacker, D. P., Berg, W., DeRaad, A., Ulrich, S., Asmus, J., et al. (1997). The long-term effects of functional communication training in home settings. *Journal of Applied Behavior Analysis, 30*, 507-531.
- Dishion, T. J., French, D. C., & Patterson, G. R. (1995). The development and ecology of antisocial behavior. In D. Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Vol. 2. Risk, disorder, and adaptation* (pp. 421-471). New York: John Wiley.
- Dodge, K. (1993). The future of research on conduct disorder. *Development and Psychopathology, 5*, 311-320.
- Duda, M. A., Dunlap, G., Fox, L., Lentini, R., & Clarke, S. (2004). An experimental evaluation of positive behavior support in a community preschool program. *Topics in Early Childhood Special Education, 24*, 143-155.
- Dunlap, G., Ester, T., Langhans, S., & Fox, L. (2006). Functional communication training with toddlers in environments. *Journal of Early Intervention, 28*, 81-96.
- Dunlap, G., Foster-Johnson, L., Clarke, S., Kern, L., & Childs, K. (1995). Modifying activities to produce functional outcomes: Effects on disruptive behavior of students with disabilities. *Journal of the Association for Persons With Severe Handicaps, 20*, 248-258.
- Dunlap, G., & Fox, L. (1999). Supporting families of young children with autism. *Infants and Young Children, 12*, 48-54.
- Dunlap, G., Fox, L., Vaughn, B. J., Bucy, M., & Clarke, S. (1997). In quest of meaningful perspectives and outcomes: A response to five commentaries. *Journal of the Association for Persons With Severe Handicaps, 22*, 221-223.
- Dunlap, G., Strain, P. S., Fox, L., Carta, J. J., Conroy, M., Smith, B., et al. (2006). Prevention and intervention with young children's challenging behavior: A summary and perspective regarding current knowledge. *Behavioral Disorders, 32*, 29-45.
- Erwin, E. J. (Ed.). (1996). *Putting children first: Visions for a brighter future for young children and their families*. Baltimore: Brookes.
- Fox, L., Vaughn B. J., Dunlap, G., & Bucy, M. (1997). Parent-professional partnership in behavioral support: A quantitative analysis of one family's experience. *Journal of the Association for Persons With Severe Handicaps, 22*, 198-207.
- Fox, L., Vaughn, B. J., Wyatte, M. L., & Dunlap, G. (2002). "We can't expect other people to understand": The perspectives of families whose children have problem behavior. *Exceptional Children, 68*, 437-450.
- Horner, R. H., & Billingsley, F. F. (1988). The effect of competing behavior on the generalization and maintenance of adaptive behavior in applied settings. In R. H. Horner, G. Dunlap, & R.L. Koegel (Eds.), *Generalization and maintenance: Life-style changes in applied settings* (pp. 197-220). Baltimore: Brookes.
- Horner, R. H., Dunlap, G., & Koegel, R. L. (1988). *Generalization and maintenance: Life-style changes in applied settings*. Baltimore: Brookes.
- Kazdin, A. (Ed.). (1985). *Treatment of antisocial behavior*. Homewood, IL: Dorsey.
- Koegel, L. K., Koegel, R. L., & Dunlap, G. (1996). *Positive behavioral support: Including people with difficult behavior in the community*. Baltimore: Brookes.
- Koegel, L. K., Stiebel, D., & Koegel, R. L. (1998). Reducing aggression in children with autism toward infant or toddler siblings. *Journal of the Association for Persons With Severe Handicaps, 23*, 111-118.
- Lucyshyn, J., Dunlap, G., & Albin, R.W. (2002). *Families and positive behavior support: Addressing the challenge of problem behaviors in family contexts*. Baltimore: Brookes.
- Lucyshyn, J. M., Horner, R. H., Dunlap, G., Albin, R. W., & Ben, K. (2002). Positive behavior support with families. In J. M. Lucyshyn, G. Dunlap, & R. W. Albin (Eds.), *Families and positive behavior support: Addressing the challenge of problem behaviors in family contexts* (pp. 3-44). Baltimore: Brookes.
- Moes, D. R. & Frea, W. D. (2000). Using family context to inform the intervention planning for the treatment of a child with autism. *Journal of Positive Behavior Interventions, 2*, 40-46.

- New Freedom Commission on Mental Health. (2003). *Achieving the promise: Transforming mental health care in America. Final report* (DHHS Pub. No. SMA-03-3832). Rockville, MD: U.S. Department of Health and Human Services.
- O'Neill, R. E., Horner, R. H., Albin, R. W., Sprague, J. R., Storey, K., & Newton, J. S. (1997). *Functional assessment and program development for problem behavior: A practical handbook*. Pacific Grove, CA: Brookes/Cole.
- Reid, J. (1993). Prevention of conduct disorder before and after school entry: Relating interventions to developmental findings. *Development and Psychopathology, 5*, 243-262.
- Shonkoff, J. P., & Phillips, D. A. (Eds.). (2001). *From neurons to neighborhoods: The science of early development*. Washington, DC: National Academy Press.
- Singer, G. H. S., & Irvin, L. K. (Eds.). (1989). *Support for caregiving families: Enabling positive adaptation to disability*. Baltimore: Brookes.
- Turnbull, A. P., & Turnbull, H. R. (2001). *Families, professionals, and exceptionality: Collaborating for empowerment*. Upper Saddle River, NJ: Prentice Hall.
- Vaughn, B. J., Clarke, S., & Dunlap, G. (1997). Assessment-based intervention for severe behavior problems in a natural family context. *Journal of Applied Behavior Analysis, 30*, 713-716.
- Voreess, J. K., & Maddox, T. (1998). *Developmental assessment of young children*. Austin, TX: Pro-Ed.
- Wacker, D. P., Berg, W. K., Harding, J. W., Derby, K. M., Asmus, J. M., & Healy, A. (1998). Evaluation and long-term treatment of aberrant behavior displayed by young children with disabilities. *Journal of Developmental and Behavioral Pediatrics, 19*, 260-266.
- Walker, H. M., Zeller, R. W., Close, D. W., Webber, J., & Gresham, F. (1999). The present unwrapped: Change and challenge in the field of behavioral disorders. *Behavioral Disorders, 24*, 293-304.