

## Clinical Forum

# Understanding and Intervening With the Challenging Behavior of Young Children With Autism Spectrum Disorder

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Young children with autism are particularly at risk for the development of challenging behavior because of their delays in communication, language, and social development. Problem behavior, a form of communicative expression that is typical for young children without disabilities, often remains in the communicative repertoire of the child with autism because it works for the child (Donnellan, Miranda, Mesaros, & Fassbender, 1984; Horner, Carr, Strain, Todd, & Reed,

**ABSTRACT:** Young children with autism and behavioral challenges are at great risk for lives that are characterized by social isolation and segregated placements. These restrictive placements often occur when the child's challenging behavior interferes with successful adaptation in educational, therapeutic, and community environments. In this article, positive behavior support is described as a process that may be used to understand and intervene effectively with the challenging behavior of young children with autism. The article describes the history, empirical support, and implementation steps of positive behavior support. A case study is provided to illustrate successful application of the process.

**KEY WORDS:** positive behavior support, functional assessment, person-centered planning, functional communication training

2000). For example, a 4-year-old child with autism may learn quickly that dropping to the floor, crying, and banging his head will result in adult attention and the delay of an activity that is not desired by the child. The 4-year-old child with typical development can be easily encouraged to use words to achieve a functional effect, but a child with autism often has fewer conventional forms of communication and much more difficulty retrieving those forms of communication within appropriate contexts.

Researchers, families, educators, and speech-language pathologists are increasingly recognizing a powerful process in the intervention for challenging behavior called positive behavior support (PBS). This process seeks to understand the challenging behavior and develop interventions that result in the acquisition of new skills by the child (Carr et al., 1999; Dunlap & Fox, 1999; Fox, Dunlap, & Buschbacher, 2000; Horner et al., 2000; National Research Council, 2001). In fact, amendments to the Individuals with Disabilities Education Act (IDEA, 1997) have mandated that components of the process of functional behavioral assessment and PBS be provided to students with disabilities whose placements in the least restrictive setting are in jeopardy because of challenging behavior. This article will describe the history, research base, and process of PBS. An accompanying case example will be provided to illustrate the value of this approach for young children with autism.

## THE DEVELOPMENT OF A NEW APPLIED SCIENCE

PBS may be described as a process that results in a broad set of systemic and individualized strategies designed to achieve important learning outcomes and an enhanced quality of life while preventing the occurrence of problem behaviors. It may be designated by some as a new applied science because, along with drawing on established scientific practices, it emphasizes person-centered values, lifestyle change, and comprehensive approaches to intervention. Hence, the origins of PBS evolved from the research in applied behavior analysis and the varying but complimentary concepts of the inclusion movement and person-centered values.

Applied behavior analysis refers to a broad science of behavior change that uses principles of operant conditioning to address issues of social importance (Baer, Wolf, & Risley, 1968). Although some professionals and parents concerned about children with autism use the term applied behavior analysis to describe a singular method of systematic instruction, it is important to note that applied behavior analysis offers a wide array of interventions and approaches to behavior change. Applied behavior analysis is an essentially pragmatic science that provides data on the effect of an intervention on the behavior of an individual or individuals.

PBS evolved from the science of applied behavior analysis and the principles of operant conditioning (Carr et al., 2002). The process of functional assessment (i.e., determining the function of behavior) used in PBS comes from research in applied behavior analysis on the nature of behavior in response to antecedents and consequences. Research in applied behavior analysis has also demonstrated the use of functional analysis (i.e., the experimental manipulation of stimuli) to determine the function of behavior. Moreover, applied behavior analysis has provided a diverse array of systematic instructional procedures that may be used within PBS to ensure new skill development and generalization.

Along with applied behavior analysis, the inclusion movement has also acted as a core influence in the development of PBS (Carr et al., 2002). The inclusion movement in education, work, and community living is based on the notion that individuals with disabilities have a fundamental right to access normal patterns of learning, working, and living that should not be compromised because of the disability (i.e., the concept of normalization). Before the inclusion movement, individuals with disabilities and problem behavior were typically relegated to go to school, work, and live within sheltered, segregated situations (e.g., special classes, sheltered workshops, group homes) in an effort to protect them from the challenges of normal environments and to shield society from having to interact with individuals with disabilities. As individuals with disabilities have become more included within typical educational, work, and living settings, it has become increasingly important to develop behavior intervention procedures that are effective and respectful and that facilitate access to inclusion.

Finally, the science of PBS has been heavily influenced by person-centered values (Carr et al., 2002). In PBS, no interventions are designed without first establishing an understanding of the needs, goals, strengths, and preferences of the individual with problem behavior. Thus, the intervention that is designed is highly individualized, respectful of the child and the child's family, and determined by the needs and desires of the individual rather than the service system. The concepts of choice, self-determination, and lifestyle enhancement are deeply embedded within person-centered values. PBS seeks to develop interventions that are effective in reducing problem behavior, but also those that create opportunities for choice and self-determination and enhance the lifestyle of the child and the child's family.

## EMPIRICAL SUPPORT

The early research on PBS and children with autism demonstrated that problem behavior was reduced when the children were taught new equally effective communication skills (Billingsley & Neel, 1985; Bird, Dores, Moniz, & Robinson, 1989; Durand & Carr, 1992; Horner & Day, 1991; Lalli, Casey, & Kates, 1995). This process, referred to as functional communication training, was critically important in the development of PBS.

For example, Durand and Carr (1992) conducted a study of 12 children with challenging behavior. A functional assessment determined that the purpose of the challenging behavior was to request attention. The children were then randomly assigned to two intervention approaches. One group received functional communication training; time-out from positive reinforcement was used for the comparison group. In the functional communication training group, the children were taught to request attention using verbal behavior. In both intervention groups, the challenging behavior was reduced, although increases in unprompted communication were seen with the functional communication training group only. More importantly, the children who received functional communication training maintained the skills they acquired beyond intervention.

Since the early studies on functional communication training, a wealth of research has supported the effectiveness of PBS. In a review of the single-subject intervention literature from a decade of research (1985–1996), more than 100 studies demonstrated that PBS was effective in reducing problem behaviors (Carr et al., 1999). The subject populations within those studies included individuals with mental retardation, individuals with mental retardation with other diagnoses, and individuals with autism. Most impressively, the effectiveness of those interventions was quite large. Two thirds of the studies described problem behavior as being reduced by as much as 80% (Carr et al., 1999).

In a review of single-subject studies of behavior intervention for young children with autism published from 1996–2000, six studies were identified that included functional assessment procedures and positive behavior interventions (Horner et al., 2000). Of those studies, the

average percentage of behavior reduction was 94.6% (Horner et al., 2000).

Two studies that provided PBS to young children with autism within natural settings are described to provide the reader with a sense of the effectiveness of the intervention and the practical utility of the approach. Dunlap and Fox (1999) provided data on the use of PBS with young children with autism and their families. They reported on the Individualized Support Project, a model program that provided PBS within the natural environment of the child and family to reduce the child's challenging behavior, enhance the child's conventional communication skills, and provide the child's caregivers with skills to continue to support the behavioral development of the child. Their study provided data on the intervention effects of PBS for 6 children whose problem behaviors included stereotypy, aggression, prolonged tantrums, biting, and self-injury. For each child, the interventionists and the parents collaborated in a functional assessment and intervention process that was sensitive to the child's strengths and needs and to the family culture. Support plans were comprehensive in that they addressed all of the child's problem behaviors across multiple routines and activities. In the study (Dunlap & Fox, 1999), all of the participating children experienced a significant reduction in problem behavior as shown by direct observation, gains on rates of development on the Battelle Developmental Inventory (Newborg, Stock, & Wnek, 1984), and reductions in autistic behavior as measured on the Autism Behavior Checklist (Krug, Arick, & Almond, 1980). Anecdotal information documented benefits of PBS on the family system. Families who participated in the project reported that they were more comfortable taking their children into the community (e.g., parks, stores, restaurants) and that their children participated more in family activities.

Koegel, Steibel, and Koegel (1998) demonstrated an important application of PBS with 3 young children who had autism. Their study focused on developing interventions for 3 preschool-aged children who displayed severe aggression toward their infant or toddler sibling. In partnership with the parent, the authors used functional assessment to determine the function of the aggressive behavior and then developed a multicomponent behavior support plan that could be implemented by the family with the guidance of the interventionist. The support plans included changes in antecedent stimuli and the instruction of new skills. For example, in one dyad, aggression during mealtime was triggered by a combination of behaviors including the child's baby sister licking the metal high chair tray, the baby crying, and the lack of attention provided by the mother as she prepared the children's plates. The sibling with autism engaged in aggression that took the form of hitting, yelling, and pinching her 8-month-old sister. The intervention involved using a plastic high chair tray (to reduce the noise); teaching the child with autism to respond to the crying by saying, "(baby's name) is talking" or "(baby's name) needs help"; providing a pacifier that the sibling could offer her sister when she was crying; and the mother preparing the meal before bringing the children to the table. Implementation of the support

plan resulted in the complete reduction of aggression and increases in the spontaneous use of targeted acceptable behavior across all 3 young children with autism. In addition, naive observers watched randomly arranged videotapes of the routines and rated the child and parent happiness as greater following intervention.

In summary, PBS has been shown to be effective in reducing challenging behavior in children with disabilities (Billingsley & Neel, 1985; Bird et al., 1989; Carr et al., 1999; Durand & Carr, 1992; Horner & Day, 1991; Lalli et al., 1995). More specifically, its efficacy has been established with children with autism spectrum disabilities within the natural contexts of their everyday lives (Dunlap & Fox, 1999; Fox, Dunlap, & Philbrick, 1997; Horner et al., 2000; Koegel et al., 1998).

## THE PBS PROCESS

PBS is a dynamic, multistep process of team building that addresses functional assessment and the intervention of challenging behavior (Dunlap & Kern, 1993; Dunlap, Newton, Fox, Benito, & Vaughn, 2001; Fox et al., 1997). The five essential steps in the PBS process are shown in Table 1. A discussion of each step in this process is presented in the following paragraphs.

### Team Building in PBS

The first step in the PBS process is to convene a team of individuals who have the best interests of the child with autism in mind (Fox, Dunlap, & Buschbacher, 2000) (see Table 1). This collaborative team could potentially include teacher(s), a speech-language pathologist, paraprofessional(s), other related service personnel (e.g., a behaviorist, an occupational therapist), and/or classmates, but always includes the family. Families know their child best and will make or break the effectiveness of interventions (Fox, Dunlap, & Buschbacher, 2000). It is not an expert-driven model of assessment and intervention for challenging behavior, but rather a collaborative model (Bambara & Knoster, 1998; Heineman & Dunlap, 1999).

**Table 1.** Five steps in the process of positive behavior support.

Step 1	Team building and goal setting (i.e., parent involvement, person-centered planning)
Step 2	Comprehensive functional assessment (i.e., gathering information) <ol style="list-style-type: none"><li>Setting events</li><li>Antecedent stimuli = triggers</li><li>Behavior</li><li>Consequences = responses</li></ol>
Step 3	Hypotheses development (best guess)
Step 4	Comprehensive support plan (i.e., development, recording)
Step 5	Implementation of support plan with outcome monitoring and measurement and refining of plan, as needed

**Family involvement in school-based settings.** The importance of parent involvement in children's individualized education plan (IEP) assessment and implementation has been well articulated (Dunst, 1997; Field & Hoffman, 1999; Turnbull & Turnbull, 1996) and is mandated through IDEA. In most cases, the family is and will remain the most essential, enduring, and knowledgeable resource for the child with autism throughout his or her development (Dunlap & Fox, 1999; Fox et al., 1997; Dunlap et al., 2001; Fox, Dunlap, & Buschbacher, 2000). Thus, it is critical to partner with parents throughout the PBS process.

Families of children with autism who exhibit challenging behavior often feel ineffective and judged by others because of their child's behavior (Turnbull & Ruef, 1996). Further, they report leading altered and restricted lives because of or in anticipation of the child's challenging behavior (Fox, Dunlap, & Buschbacher, 2000). The behaviors negatively impact on their lifestyle, including relationships between siblings and with extended family members and friends, community participation, school involvement, faith-based participation, and home routines (Hart, 1995; Turnbull & Ruef, 1996). Nevertheless, each family with its unique strengths and needs is the expert regarding its child (Fox, Dunlap, & Buschbacher, 2000). Thus, provisions should be made for some level of family input and participation in the process of assessment and intervention for several compelling reasons. As partners in the process, family members can identify the environments and activities in which the challenging behavior is likely to occur and not occur (Albin, Lucyshyn, Horner, & Flannery, 1996; Slentz & Bricker, 1992). Their unique perspectives are important in assessing the functions of the behavior and implementing more holistic successful, durable interventions (Slentz & Bricker, 1992; Walker, 1998; Walker, Colvin, & Ramsey, 1993). Family members may provide insights regarding antecedents and consequences that promote the challenging behavior and possible setting events (e.g., medications, lack of sleep) (Bijou, Peterson, & Ault, 1968) and may identify intervention strategies that have been successful or failed in the past (Arndorfer, Miltenberger, Woster, Rortvedt, & Gaffney, 1994; Boulware, Schwartz, & McBride, 1999). Finally, a professional-family partnership may facilitate the family's implementation of strategies used in school or in the speech-language therapy setting to home and the community, thereby increasing the likelihood of the child generalizing skills across his or her environments.

Little has been written about involving families in school-based functional assessment and intervention. The final decision regarding the amount of their involvement in the assessment and intervention process should lie with the family and should be discussed, agreed on, and supported by the team (Chandler & Dahlquist, 2002). The level of family involvement will vary across families dependent on their time, their interest in addressing the child's challenging behavior, and the amount of effort required (Turnbull & Turnbull, 1997). Chandler and Dahlquist (2002) recommended that a variety of participation options be communicated to families. Some possibilities might include observing their child at school, receiving written updates on their child's progress, attending workshops on PBS or other

elements of the assessment/intervention process, participating in a functional assessment interview (O'Neill, Horner, Albin, Storey, Sprague, & Newton, 1997), participating in team meetings, collecting data (Bijou et al., 1968; Touchette, MacDonald, & Langer, 1985), implementing intervention strategies at home and in the community, and/or teaching others to implement functional assessments and/or the intervention strategies.

Dunlap et al. (2001) proposed several considerations for encouraging family involvement in the process of PBS. These included but were not limited to (a) recognizing, respecting, and accommodating the family's individuality; (b) creating a context for family-centered participation through person-centered planning techniques (Holburn, 1997; Kincaid, 1996; Mount & Zwernick, 1988; Pearpoint, O'Brien, & Forest, 1998; Turnbull & Turnbull, 1996); (c) taking a comprehensive or holistic perspective considering the ecological, physiological, and systemic variables possibly influencing behavior; and (d) developing and maintaining an ongoing team partnership to support the child's positive behavior and minimize his or her challenging behavior at home, in school, and out in the community.

**Person-centered planning.** Many PBS teams choose to use person-centered planning (see Table 1) before moving ahead with the PBS process. The person-centered planning process has been described in the literature as an important component of PBS (Forest & Lusthaus, 1987; Holburn, 1997; Kincaid, 1996; Mount & Zwernick, 1988; Pearpoint et al., 1998; Turnbull & Turnbull, 1996). Examples of person-centered planning methodology include personal futures planning (Mount & Zwernick, 1988), group action planning (Turnbull & Turnbull, 1996), and planning alternative tomorrows with hope (PATH; Pearpoint et al., 1998). Person-centered planning serves as a vehicle for thinking creatively and bringing together a team of people who are important in the child's life (e.g., family, friends, support providers). As an informal and intimate process, person-centered planning focuses on the "whole" child, informing the team of the child's capacities as well as his or her needs (Mount & Zwernick, 1988). Through this creative, collaborative approach, a vision for the child with autism is created and an action plan is developed. Thus, person-centered planning informs the functional assessment process and lays a strong foundation for the development of an effective support plan for intervention.

## Comprehensive Functional Assessment

Once the team has convened and engaged in goal identification and person-centered planning, a comprehensive functional assessment process (see Table 1) is used to provide a clear description of the challenging behavior (Carr, Levin, McConnachie, Carlson, Kemp, & Smith, 1994), the natural context(s) in which it occurs, the antecedents and consequences maintaining the behavior, and the communicative function of the behavior (e.g., request attention, request food/drink, escape a transition, escape a perceived difficult task) (Foster-Johnson & Dunlap, 1993; O'Neill, Vaughn, & Dunlap, 1998; Tilly, Knoster, Kovaleski, Bambara, Dunlap, & Kincaid, 1998). The goal

of functional assessment is to gain an understanding of the function of the challenging behavior and when the behavior is most and least likely to occur. The development of a successful behavioral support plan hinges on understanding the function(s) of the challenging behavior (Fox et al., 1997; Iwata, Dorsey, Slifer, Bauman, & Richman, 1982), which is the most relevant variable for successful communication training (Durand & Carr, 1991; Northrup et al., 1991; Wacker et al., 1990).

The literature describes multiple methods used in the functional assessment process (Carr et al., 1994; Dunlap & Fox, 1999; Dunlap & Kern, 1993; Fox, Dunlap, & Buschbacher, 2000; Meyer & Evans, 1989; O'Neill et al., 1997), including (a) interviews with parents, school staff, and others significant in the child's life; (b) direct observations; (c) review of archival records (e.g., health, development, IEP, behavior); and (d) structured functional analysis, as needed. The information gathered in the functional assessment process culminates in written hypotheses regarding the challenging behavior.

One method for gathering information on the challenging behavior is to interview the family, school staff (e.g., teacher, speech-language pathologist, paraprofessional, bus driver), and/or others who have direct knowledge of the child and the challenging behavior. Input from as many of the team members as possible provides a more holistic picture of the child and the challenging behavior. If the child is screaming and being aggressive toward staff and children while riding the bus to school, the bus driver's participation in the functional assessment process is critical. Dunlap and Kern (1993) recommended that interviews be conducted with at least two members of the school staff and at least one member of the child's family. O'Neill et al. (1997) designed the Functional Assessment Interview Form (FAIF) to yield information about the child, when the behavior is most and least likely to occur, potential setting events, and the communicative function(s) of the behavior.

It is critical to observe the child directly within the settings and activities (e.g., peer play, circle time, bedtime, speech and language therapy, lunchroom) where the challenging behavior is likely to occur. This step can be used as a means of confirming relationships described in the interviews and providing an empirical baseline and a quantifiable index of the relationships between environmental events and the occurrence of the target behavior. This information might be collected using one or more of several methods. An observation card (Carr et al., 1994) can be filled out by the observer on which is recorded the social context of the situation (e.g., lining up for lunch), a description of the antecedent (e.g., child is working on a puzzle and the teacher tells the class to line up for lunch), problem behavior (e.g., the child throws the puzzle onto the floor and screams), and consequence (e.g., paraprofessional comes over to the child and helps the child clean up the puzzle and get ready to go to lunch) (Bijou et al., 1968; Horner, O'Neill, & Flannery, 1993; O'Neill et al., 1997; O'Neill et al., 1998). A scatter plot might be used to identify problematic times of the school day for the child (Touchette et al., 1985). For a scatter plot, the day is divided into intervals and frequency counts are recorded

within the intervals. The intervals can be defined as time periods (e.g., half-an-hour blocks) or as activities (e.g., arrival, circle time, lunch). The data are then plotted with the intervals on the ordinate and the times/activities on the abscissa and the cells are filled in with the problem behavior. The result is a scatter plot for the occurrence of the challenging behavior for given times/activities.

Archival records (e.g., crisis logs, evaluations, medical records, school records) should also be reviewed to provide a more holistic picture of the child. These may provide developmental information (e.g., evaluation results, samples of work) as well as information on previous interventions that worked or did not work, chronic health concerns (e.g., chronic illness, allergies, medications), and other relevant information (Dunlap & Kern, 1993; Harrower, Fox, Dunlap, & Kincaid, 2000).

In addition to proximally related contextual variables, comprehensive functional assessment may provide information regarding potential setting events (e.g., seizures, chronic otitis media, otitis media with effusion, allergies, sensory overload, nausea from a long bus ride) that may increase the likelihood of the occurrence of challenging behavior. Although setting events do not cause the challenging behavior (Dunlap et al., 2001; Fox, Dunlap, & Buschbacher, 2000; Harrower et al., 2000), these related events set the stage for a higher probability of challenging behavior. Families and school staff are in unique positions to provide input to the team regarding the possible influence of particular setting events. Harrower et al. (2000) suggested that a team member develop a simple observation checklist for the parent to collect information on the potential setting event (e.g., pollen count if related to environmental allergies, number of hours of sleep per night) and the incidence of challenging behavior the next day for a period of 1–2 weeks. If particular setting events are determined to be related to the occurrence of challenging behavior, intervention should include management of those medical, physiological, or social settings factors/events (Dadson & Horner, 1993; Kennedy & Itkonen, 1993; Turnbull & Turnbull, 1996).

## Hypotheses Development

The functional assessment process results in the team's development of hypotheses (see Table 1). Hypothesis statements represent the best informed guess about the relationship(s) between the environment to the child's challenging behavior and the communication function(s) the behavior serves (Dunlap & Kern, 1993; Fox, Dunlap, Buschbacher, & Valente, 2000; Fox et al., 1997; Harrower et al., 2000). A hypothesis statement includes a description of the antecedent(s), the behavior (e.g., a tantrum described as screaming, body extension, head banging, and dropping to the floor), the maintaining consequences, and communicative function(s) of the behavior. The hypothesis statement is the foundation for building the support plan for the child.

When the communicative function(s) of the challenging behavior is/are known, appropriate communication-based intervention can be matched to the target behavior (Carr, 1988; Iwata et al., 1982). The literature describes the two

most common communicative functions of challenging to “get” something (e.g., attention, comfort, food/drink, stimulation, help, activity, object) or to “avoid” or “escape” something (e.g., attention, discomfort, transition, demands, stimulation) (Carr et al., 1994).

## Comprehensive Support Plan Development

Horner and Carr (1997) described a comprehensive behavior support plan (see Table 1) as (a) being based on a functional assessment of the challenging behavior, (b) using multiple intervention strategies, (c) being applied throughout the day, and (d) being consistent with the values and resources of the child being supported and the persons providing the support (e.g., parent, classmate, teacher, paraprofessional, speech-language pathologist, bus driver). Thus, the support plan is a team effort, developed and implemented in partnership with the family as much as possible (Dunlap et al., 2001; Fox, Dunlap, & Buschbacher, 2000; Harrower et al., 2000; Horner & Carr, 1997). It begins with the hypothesis statements and is designed with the goal of creating conditions that make the problem behavior unnecessary and ineffective for the child (Dunlap & Kern, 1993; Horner & Carr, 1997; O’Neill et al., 1997).

The five key elements of a comprehensive behavior support plan are presented in Table 2 and will be discussed in further detail.

**Behavior hypotheses.** These statements include information regarding the antecedents, the behavior, the maintaining consequences, and the communicative function of the behavior (e.g., request, protest, escape).

**Long-term supports.** These statements include strategies and supports to assist the child’s overall health, development, and social/communication interaction. These might include anything from scheduled team meetings and the instruction of team members in support strategies to medical management of upper respiratory infections, chronic otitis media, allergies, and seizures to increased opportunities for inclusion in school and in the community. The ultimate impact is a better quality of life for the child and significant others in his or her life (Turnbull & Ruef, 1996).

**Prevention strategies.** This section of the behavior support plan includes antecedent manipulations in the environment, activities, and others’ interactions with the child, especially attending to the cues that have been identified as working for the child (e.g., use of transition warnings, visual schedules, visual choice boards, “wait time” for processing of auditory information, picture social stories) (Dunlap & Fox, 1999; Dunlap & Kern, 1993; Kern & Dunlap, 1998). In other words, how can the

environments be changed to reduce the likelihood that problem behavior will occur? Here it is important to choose strategies that will fit in the natural routines and structure of the classroom or family.

**Replacement social and communication skills.** A major focus of the behavior support plan will be the instruction of replacement skills. Research has demonstrated that as the child acquires effective, more conventional alternative forms of communication for getting what he or she wants, there is a collateral decrease in challenging behavior (Billingsly & Neel, 1985; Durand & Carr, 1992; Lalli et al., 1995). The instruction of replacement skills or the implementation of functional communication training requires that the team develop a systematic instructional plan to teach the replacement behavior. The instructional plan should include a prompt hierarchy for the instruction of the new skills, the scheduling of an adequate number of instructional trials to ensure acquisition of the target skills, and a format for collecting data on the child’s progress.

Adapted and conventional skills are taught to the child to replace the challenging behavior (Carr et al., 1994). These are functional communication and social skills that match the identified purpose of the challenging behavior (Carr et al., 1999; Koegel et al., 1998). For example, the child might be taught to sign, exchange a picture, or say “finished” to indicate that he is finished playing with play dough instead of throwing the play dough on the floor. It is important that these skills be efficient (i.e., require less physical effort than the challenging behavior and result in faster and consistent payoffs) and functionally equivalent to the challenging behavior (Carr et al., 1994; Dunlap & Fox, 1999; Durand, 1990). Functional communication (i.e., skill building) could produce relatively greater reduction and prevention of challenging behavior (Reeve, 1996). Development of functionally equivalent communication reduces the need to engage in challenging behavior (Carr et al., 1994; Meyer & Evans, 1989).

It is important to consider and build on skills that are already in the child’s repertoire (e.g., communication, social, play). These skills should be taught throughout the day, by a variety of people, within a variety of natural routines and environments (Koegel, Koegel, Harrower, & Carter, 1999). The best time to teach these skills is when the child is not experiencing challenging behavior.

Communication intervention considerations for the child often include expanding communicative functions, expanding communicative means (e.g., eye gaze shift, pointing, leading, picture exchange, vocalizing/verbalizing), facilitating the use of repair strategies in social and communicative exchanges, developing social reciprocity, (e.g., taking turns), and enhancing social relatedness (Wetherby & Prizant, 1992).

**Consequential strategies.** The support plan must also outline how other people should respond to the acceptable replacement skills and, should it arise, to the challenging behavior. Rewards for appropriate behavior should equal or exceed rewards for the challenging behavior such that there is an increased occurrence of the replacement skills. Procedures for responding to challenging behavior should

**Table 2.** Key elements of a comprehensive behavior support plan.

Behavior hypotheses
Long-term supports
Prevention strategies
Replacement social and communication skills
Consequential strategies

discourage its use because it is no longer effective for the child (O'Neill et al., 1997).

## Implementation of the Support Plan and Outcomes Measurement

As the team develops the behavior support plan and intervention strategies, it is critically important to examine the “fit” of the plan with the personal, cultural, and structural values and contexts of the child, family, and classroom so that those persons implementing the plan are comfortable doing so in all of the child’s routines and environments (Albin et al., 1996). The “fit” of the plan with the context, referred to as “contextual” fit, has direct implications for implementation fidelity. Teachers and family members are unlikely to consistently implement a behavior support plan that they find cumbersome or objectionable.

As the behavior support plan is implemented, the team should evaluate the effectiveness of the plan and the achievement of meaningful outcomes on an ongoing basis (see Table 1). Outcome measurement should include decreases in challenging behavior; increases in the targeted replacement skills; changes in the child’s overall social and behavioral competence and other variables that may be meaningful for an individual child, such as accessing new environments; increased engagement in learning activities; developing friendships; and changes in affect. The team must meet periodically to review the behavior support plan, assess the child’s progress, and fine tune the plan when necessary.

The following section provides an example of the functional assessment process, support plan development, and intervention process for a young child with autism and severe challenging behaviors.

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## BENJAMIN: A CASE EXAMPLE

Benjamin (aged 3;6 [years;months]) was diagnosed with autism spectrum disorder. He lived with his mother and father and was enrolled in a self-contained early childhood classroom for children with autism. He received speech and language therapy and occupational therapy at school and also in a clinical setting outside of school. His history included intermittent night wakings of several hours; chronic upper respiratory infections; chronic otitis media; and dairy, wheat, and egg allergies. Antibiotics had been prescribed when necessary and bilateral myringotomy tubes were in place to manage frequent episodes of otitis media and upper respiratory infections. His parents provided Benjamin with a diet free of his identified food allergens.

Benjamin demonstrated intense and prolonged tantrums that disrupted his family’s life and interfered with his ability to be productively engaged and responsive to instruction at school and in therapy. Benjamin neither imitated adults or peers, played creatively, nor followed adult’s instruction. Challenging behaviors were evidenced in all of his environments (e.g., home, community, school,

therapy). Several tantrums occurred throughout the day and included falling to the ground, screaming, flailing arms and legs, performing aggressive acts on others (e.g., hair pulling, biting, scratching), and self-injury (e.g., hand biting, head banging). He usually tantrummed when the family returned home from outside or trips in the car, upon entering his classroom, and transitioning from the car to places in the community (e.g., stores, doctor’s office, therapy office, restaurants.). He often reacted to self-care activities (bathing, diaper changing, dressing, and undressing) with tantrums. He preferred to engage in solitary play and usually tantrummed when his parents or peers attempted to join his play. Benjamin’s parents voiced apprehension about going out to family and community events because they were uncertain whether he would tantrum and they would have to leave. The family expressed that over time, they had modified their activities to avoid triggering Benjamin’s problem behavior. They were reluctant to place demands on Benjamin, take him on family errands, or teach him self-care skills.

## Team Building

As an initial step in planning the functional assessment process and intervention, Benjamin’s parents and others significant in his life (e.g., grandparents, teacher, speech-language pathologist, occupational therapist, paraprofessionals, two couples who were friends of the family) participated in a person-centered planning meeting that was facilitated by an additional interventionist. The person-centered planning meeting provided a venue for Benjamin’s parents to describe the “whole” Benjamin for family, friends, and professionals and their dreams for his future. It served as a vehicle for understanding family goals and building a “circle of support” for Benjamin and his parents to realize those goals. Those present identified the following goals to be achieved by age 4½: (a) to sleep through the night, (b) to be with typical kids and have friends, (c) to become independent in self-care, (d) to communicate his wants and needs more effectively, (e) to participate effectively in community activities, (f) to eat a variety of foods at the table with his family, and (g) to be included with peers without disabilities at school.

## Comprehensive Functional Assessment

Following the person-centered planning meeting, the behavior support team (e.g., Benjamin’s parents, an early interventionist affiliated with the project, and Benjamin’s teacher, speech-language pathologist, and occupational therapist) conducted a functional assessment of the challenging behaviors. Responsibility for gathering functional assessment information was divided among the team members, with the early interventionist guiding the process. The early interventionist used functional assessment interviews with the family, speech-language pathologist, and occupational therapist to describe the problem behaviors and identify the possible triggers and maintaining variables associated with the challenging behaviors. Additionally, the

early interventionist conducted observations within the routines identified by the parents and speech-language pathologist as problematic, recording the antecedents, behavior, and consequences. Benjamin's parents, teacher, and speech-language pathologist also recorded the antecedents and consequences for his problem behavior when it occurred. Benjamin's mother provided a daily record of sleep behaviors for several weeks. The teacher, speech-language pathologist, and occupational therapist provided updated communication and play assessment information on Benjamin's strengths and instructional needs.

## Hypotheses Development

The entire team, including Benjamin's parents, met to review the information, identify patterns in Benjamin's behavior, and formulate hypotheses regarding the challenging behavior. The team determined that there were four possible setting events that might increase the likelihood of challenging behavior and that Benjamin used tantrums for several functions. These are listed in Table 3.

## Comprehensive Behavior Support Plan Development

With the development of hypotheses, the support team (e.g., parents, early interventionist, teacher, private and school-based speech-language pathologists and occupational therapists) developed a comprehensive behavior support plan for Benjamin. This written plan is outlined in Table 4 and included the possible setting events, problem behavior hypotheses, long-term supports, prevention strategies, replacement skill instruction, and consequence strategies for acceptable and problem behaviors. As a supplement to the overall behavior support plan, there were also mini-support

plans for particular activities or routines (e.g., private speech and language therapy, toileting, doctor's visits, shopping, playing with dad, taking a break at school).

## Support Plan Implementation

Benjamin's intervention plan was implemented by all of his support team members. The early interventionist, who also was a speech-language pathologist, modeled and coached his parents and other team members as needed in the strategies. The effectiveness of the strategies was discussed and modifications were made, as needed.

Six months later, Benjamin's tantrums were minimal. Team members were facile in using support strategies. Benjamin readily sought out and used his visual schedules and choice boards, increasingly verbalized requests and protests, engaged in simple dramatic play with others, and participated in an increased number of community activities effectively (e.g., shopping, going to the beach or the playground, eating out). Team members and school staff were in agreement that he was responding more consistently to education and therapeutic interventions.

## SUMMARY

PBS offers a highly effective approach for addressing the challenging behavior of young children with autism. When PBS is implemented with a sincere commitment to support an individual with challenging behavior, dramatic outcomes can result. It is important to note that PBS is not the only intervention that should be provided to young children with autism. It is, however, a process that can support a child to acquire the critical skills necessary for learning. Successful applications of PBS will support the

**Table 3.** Summary hypotheses regarding Benjamin's challenging behavior.

<i>Problem behavior summary</i>	<i>Principal hypotheses</i>	<i>Adult response(s)</i>	<i>Consequence</i>
Hiding under a table or tantruming (i.e., single or any combination of screaming, crying with or without tears, falling to the floor, arching his back, flailing his arms or legs, head banging, pinching, biting)	Escape (avoid) a demand or task he perceived as difficult or did not understand, delay or escape (avoid) a transition from one activity/toy to another	Redirection or negative attention or decrease in demand	Often successful in, at least, delaying having to follow through with the demand or making the transition
Sometimes tantrum (i.e., single or any combination of crying with or without tears, falling to the floor, arching his back, flailing his arms or legs, head banging, pinching, biting)	Protest another person ending a preferred activity before he has decided to do so	Redirection or negative attention or allow him to remain with the activity	Often successful in, at least, delaying the cessation of the activity
Tantrum (see preceding list possible behaviors)	Request help with a difficult activity	Assistance or negative attention or no response	Often gets help
Tantrum (see preceding list of possible behaviors)	Request attention or comfort when he is upset, ill (i.e., earache), or hurt	No response or negative attention or comfort him	Sometimes gets a hug, attention, medical attention



**Table 4.** Summary of the components in Benjamin’s individualized behavior support plan.

<i>Long-term supports</i>	<i>Prevention strategies</i>	<i>Replacement skills</i>	<i>Consequential strategies</i>
Team members will maintain ongoing communication to establish a uniform set of expectations across environments (home, school) and maximize generalization of all skills.	Provide photo/icon schedule of activities, provide transition warnings, provide icons to request help/break/all done, provide choice board, use “First...Then” board to help with transitions, provide wellness/emotion board, honor his “no” at times, provide him with a 4-second wait time after giving him a direction or asking a question so he can process what has been said, read ‘social stories’ to him to prepare him for novel situations, model replacement skills	Use photo/icon schedule, request choice with photo/icon exchange and/or verbal request, imitate actions within familiar routines (e.g., circle time, fingerplays, meals), take turns within an activity, request assistance (help) with icon exchange and/or verbalized “help me, (name of adult/peer),” exchange an icon and/or verbalize “all done” to immediately end an activity, exchange and/or verbalize “break” during an activity to request time away from the activity	Team members will provide concrete and relevant praise for skill demonstration. If he tantrums to escape an activity, redirect him to exchange a photo/icon or verbalize “all done,” “break” (e.g., “Say, ‘all done’”). If he tantrums to obtain help or comfort, redirect him to exchange an icon and/or verbalize request. If he tantrums to request food/drink/activity/toy, redirect him to exchange a photo/icon or provide a verbal model for him to imitate.

child’s engagement, social comfort, and behavioral adaptation within a variety of instructional situations, social interactions, and settings. It is a process that is costly in staff time and teamwork. However, this expenditure of resources is more likely to result in positive outcomes for the child, instructional personnel, and the child’s family.

## REFERENCES

- Albin, R. W., Lucyshyn, J. M., Horner, R. H., & Flannery, K. B. (1996). Contextual fit for behavioral support plans: A model for “goodness of fit.” In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 81–98). Baltimore: Brookes.
- Arndorfer, R. E., Miltenberger, R. G., Woster, S. H., Rortvedt, A. K., & Gaffney, T. (1994). Home-based descriptive and experimental analysis of problem behaviors in children. *Topics in Early Childhood Special Education, 14*(1), 64–87.
- Baer, D. M., Wolf, M. M., & Risley, T. R. (1968). Some current dimensions of applied behavior analysis. *Journal of Applied Behavior Analysis, 20*, 313–327.
- Bambara, L. M., & Knoster, T. (1998). *Designing positive behavior support plans*. Washington, DC: American Association on Mental Retardation.
- Bijou, S. W., Peterson, R. F., & Ault, M. H. (1968). A method to integrate descriptive and experimental field studies at the level of data and empirical concepts. *Journal of Applied Behavior Analysis, 1*, 175–191.
- Billingsley, F. F., & Neel, R. S. (1985). Competing behaviors and their effects on skill generalization and maintenance. *Analysis and Intervention in Developmental Disabilities, 5*, 357–372.
- Bird, F., Dores, P. A., Moniz, D., & Robinson, J. (1989). Reducing severe aggressive and self-injurious behaviors with functional communication training. *American Journal on Mental Retardation, 94*, 37–48.
- Boulware, G. L., Schwartz, L., & McBride, B. (1999). Addressing challenging behaviors at home: Working with families to find solutions. *Young Exceptional Children, 3*, 21–27.
- Carr, E. G. (1988). Functional equivalence as a mechanism for response generalization. In R. H. Horner, G. Dunlap, & R. L. Koegel (Eds.), *Generalization and maintenance: Lifestyle changes in applied settings* (pp. 221–241). Baltimore: Brookes.
- Carr, E. G., Dunlap, G., Horner, R. H., Koegel, R. L., Turnbull, A. P., Sailor, W., et al. (2002). Positive behavior support: Evolution of an applied science. *Journal of Positive Behavior Intervention, 4*, 4–16.
- Carr, E. G., Horner, R. H., Turnbull, A., Marquis, J., Magito-McLaughlin, D., McAtee, M. L., et al. (1999). *Positive behavior support as an approach for dealing with problem behavior in people with developmental disabilities: A research synthesis*. Washington, DC: American Association on Mental Retardation Monograph.
- Carr, E. G., Levin, L., McConnachie, G., Carlson, J. I., Kemp, D. C., & Smith, C. E. (1994). *Communication-based interventions for problem behavior: A user’s guide for producing behavior change*. Baltimore: Brookes.
- Chandler, L. K., & Dahlquist, C. M. (2002). *Functional assessment: Strategies to prevent and remediate challenging behavior in school settings*. Columbus, OH: Merrill.
- Dadson, S., & Horner, R. H. (1993). Manipulating setting events to decrease problem behaviors: A case study. *Applied Behavior Analysis, 30*, 507–531.
- Donnellan, A. M., Mirenda, P. L., Mesaros, R. A., & Fassbender, L. L. (1984). Analyzing the communicative functions of aberrant behavior. *Journal of the Association for Persons with Severe Handicaps, 9*, 201–212.
- Dunlap, G., & Fox, L. (1999). A demonstration of behavioral support for young children with autism. *Journal of Positive Behavior Support, 1*(2), 77–87.
- Dunlap, G., & Kern, L. (1993). Assessment and intervention for children within the instructional curriculum. In J. Reichle & D. P. Wacker (Eds.), *Communicative alternatives to challenging behavior* (pp. 177–203). Baltimore: Brookes.
- Dunlap, G., Newton, S., Fox, L., Benito, N., & Vaughn, B. (2001). Family involvement in functional assessment and positive behavior support. *Focus on Autism and Other Developmental Disabilities, 16*(4), 215–221.
- Dunst, C. J. (1997). Conceptual and empirical foundations of family-centered practice. In R. J. H. Illback & C. T. Cobb

- (Eds.), *Integrated services for children and families: Opportunities for psychological practice* (pp. 75–91). Washington, DC: American Psychological Association.
- Durand, V. M.** (1990). *Functional communication training: An intervention program for severe behavior problems*. New York: Guilford Press.
- Durand, V. M., & Carr, E. G.** (1991). Functional communication training to reduce challenging behavior: Maintenance and application in new settings. *Journal of Applied Behavior Analysis, 24*, 251–264.
- Durand, V. M., & Carr, E. G.** (1992). An analysis of maintenance following functional communication training. *Journal of Applied Behavior Analysis, 25*, 777–794.
- Field, S., & Hoffman, A.** (1999). The importance of family involvement for promoting self-determination in adolescents with autism and other developmental disabilities. *Focus on Autism and Other Developmental Disabilities, 14*, 36–41.
- Forest, M., & Lusthaus, E.** (1987). The kaleidoscope: Challenge to the cascade. In M. Forest (Ed.), *More education/integration* (pp. 1–16). Downsview, Ontario: G. Allen Roehner Institute.
- Foster-Johnson, L., & Dunlap, G.** (1993). Using functional assessment to develop effective, individualized interventions. *Teaching Exceptional Children, 25*, 44–50.
- Fox, L., Dunlap, G., & Buschbacher, P.** (2000). Understanding and intervening with children's challenging behavior: A comprehensive approach. In S. F. Warren & J. Reichle (Series Eds.) & A. M. Wetherby & B. M. Prizant (Vol. Eds.), *Communication and language intervention series: Vol. 9. Autism spectrum disorders: A transactional developmental perspective* (pp. 307–331). Baltimore: Brookes.
- Fox, L., Dunlap, G., Buschbacher, P., & Valente, L.** (2000). *Individualized support project: Developing individualized supports for young children with autism and their families*. Unpublished manuscript, University of South Florida.
- Fox, L., Dunlap, G., & Philbrick, L. A.** (1997). Providing individualized supports to young children with autism and their families. *Journal of Early Intervention, 21*, 1–14.
- Harrower, J. K., Fox, L., Dunlap, G., & Kincaid, D.** (2000). Functional assessment and comprehensive early intervention. *Exceptionality, 8*(3), 189–204.
- Hart, C.** (1995). Teaching children what parents want. In K. A. Quill (Ed.), *Teaching children with autism* (pp. 53–69). New York, Delmar.
- Heineman, M., & Dunlap, G.** (1999). Issues and challenges in implementing community-based support for two boys with severe behavioral difficulties. In J. R. Scotti & L. H. Meyer (Eds.), *Behavioral interventions: Principles, models, and practices* (pp. 366–384). Baltimore: Brookes.
- Holburn, S. A.** (1997). A renaissance in residential behavior analysis? A historical perspective and a better way to help people with challenging behavior. *Behavior Analyst, 20*, 61–85.
- Horner, R. H., & Carr, E. G.** (1997). Behavioral support for students with severe disabilities: Functional assessment and comprehensive intervention. *The Journal of Special Education, 31*, 84–104.
- Horner, R. H., Carr, E. G., Strain, P. S., Todd, A. W., & Reed, H. K.** (2000, April). *Problem behavior interventions for young children with autism: A research synthesis*. Paper prepared for the National Academy of Sciences Committee on Early Interventions for Children with Autism, Washington, DC.
- Horner, R. H., & Day, H. M.** (1991). The effects of response efficiency on functionally equivalent competing behaviors. *Journal of Applied Behavior Analysis, 24*, 719–732.
- Horner, R. H., O'Neill, R. E., & Flannery, K. B.** (1993). Building effective behavior support plans from functional assessment information. In M. E. Snell (Ed.), *Systematic instruction for students with severe handicaps* (4th ed., pp. 184–214). Columbus, OH: Merrill.
- Individuals with Disabilities Education Act Amendments of 1997, 20 U.S.C. §§ 1400 *et seq.*
- Iwata, B. A., Dorsey, M. F., Slifer, K. J., Bauman, K. D., & Richman, G. S.** (1982). Toward a functional analysis of self-injury. *Analysis and Intervention in Developmental Disabilities, 2*, 3–20.
- Kennedy, C. H., & Itkonen, T.** (1993). Effects of setting events on the problem of students with severe disabilities. *Journal of Applied Behavior Analysis, 12*, 321–327.
- Kern, L., & Dunlap, G.** (1998). Curricular modifications to promote desirable classroom behavior. In J. K. Luselli & M. J. Cameron (Eds.), *Antecedent control: Innovative approaches to behavioral support* (pp. 289–307). Baltimore: Brookes.
- Kincaid, D.** (1996). Person-centered planning. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 439–465). Baltimore: Brookes.
- Koegel, L. K., Koegel, R. L., Harrower, J. K., & Carter, C. M.** (1999). Pivotal response intervention I: Overview of approach. *Journal of the Association for Persons with Severe Handicaps, 24*, 174–185.
- Koegel, L. K., Steibel, 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.
- Krug, D. A., Arick, J. R., & Almond, P. J.** (1980). *Autism Behavior Checklist*. Austin, TX: Pro-Ed.
- Lalli, J. S., Casey, S., & Kates, K.** (1995). Reducing escape behavior and increasing task completion with functional communication training, extinction, and response chaining. *Journal of Applied Behavior Analysis, 28*, 261–268.
- Meyer, L. H., & Evans, I. M.** (1989). *Nonaversive intervention for behavior problems: A manual for home and community*. Baltimore: Brookes.
- Mount, B., & Zwernick, K.** (1988). *It's never too early. It's never too late*. St. Paul, MN: Metropolitan Council.
- National Research Council.** (2001). *Educating children with autism*. Washington, DC: National Academy Press.
- Newborg, J., Stock, J. R., & Wnek, L.** (1984). *Battelle Developmental Inventory*. Allen, TX: DLM Teaching Resources.
- Northrup, J., Wacker, D., Sasso, G., Steege, M., Cigrand, K., Cook, J., et al.** (1991). A brief functional analysis of aggressive and alternative behavior in an outclinic setting. *Journal of Applied Behavior Analysis, 24*, 509–522.
- O'Neill, R. E., Horner, R. H., Albin, R. W., Storey, K., Sprague, J. R., & Newton, J. S.** (1997). *Functional assessment of problem behavior: A practical assessment guide*. Pacific Grove, CA: Brookes/Cole.
- O'Neill, R. E., Vaughn, B. J., & Dunlap, G.** (1998). Comprehensive behavioral support: Assessment issues and strategies. In A. M. Wetherby, S. F. Warren, & J. Reichle (Eds.), *Transitions in prelinguistic communication* (pp. 313–341). Baltimore: Brookes.

- Pearpoint, J., O'Brien, J., & Forest, M.** (1998). *PATH, a workbook for planning positive possible futures: Planning alternative tomorrows with hope for schools, organizations, businesses, families*. Toronto, Canada: Inclusion Press.
- Reeve, C. E.** (1996). *Prevention of severe behavior problems in children with developmental disabilities*. Unpublished doctoral dissertation, State University of New York at Stony Brook.
- Slentz, K. L., & Bricker, D.** (1992). Family-guided assessment for IFSP development: Jumping off the family assessment bandwagon. *Journal of Early Intervention, 16*, 11–19.
- Tilly, W. D., Knoster, T. P., Kovalski, J., Bambara, L., Dunlap, G., & Kincaid D.** (1998). *Functional behavioral assessment: Policy development in light of emerging research and practice*. Alexandria, VA: National Association of State Directors of Special Education.
- Touchette, P. E., MacDonald, R. F., & Langer, S. N.** (1985). A scatterplot for identifying stimulus control of problem behavior. *Journal of Applied Behavior Analysis, 18*, 343–351.
- Turnbull, A. P., & Ruef, M.** (1996). Family perspectives on problem behavior. *Mental Retardation, 34*, 280–293.
- Turnbull, A. P., & Turnbull, H. R.** (1996). Group action planning as a strategy for providing comprehensive family support. In L. K. Koegel, R. L. Koegel, & G. Dunlap (Eds.), *Positive behavioral support: Including people with difficult behavior in the community* (pp. 99–114). Baltimore: Brookes.
- Turnbull, A. P., & Turnbull, H. R.** (1997). *Families, professionals, and exceptionality: A special partnership* (3rd ed.). Upper Saddle River, NJ: Merrill/Prentice Hall.
- Wacker, D., Steege, M., Northus, J., Sasso, G., Berg, W., Reimers, T., et al.** (1990). A component analysis of functional communication training across three topographies of severe behavior problems. *Journal of Applied Behavior Analysis, 23*, 417–429.
- Walker, H. M.** (1998). First steps to prevent antisocial behavior. *Teaching Exceptional Children, 30*(4), 16–19.
- Walker, H. M., Colvin, G., & Ramsey, E.** (1993). *Antisocial behavior in schools: Strategies and best practices*. Pacific Grove, CA: Brookes/Cole.
- Wetherby, A., & Prizant, B.** (1992). Facilitating language and communication development in autism: Assessment and intervention guidelines. In D. Berkell (Ed.), *Autism: Identification, education and treatment* (pp. 107–134). Englewood Cliffs, NJ: Erlbaum.

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