

Interventions for Children With Autism Spectrum Disorders in Inclusive School Settings

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Students with ASD present unique challenges to school systems. Despite these challenges, federal laws require that schools implement research-based practices in the least restrictive environment (LRE). The LRE is often deemed to be the general education classroom and the primary intervention agent is often the classroom teacher. Ensuring students with ASD receive effective intervention in these least restrictive and inclusive school settings will depend, in part, on the extent to which teachers and school personnel are prepared to implement research-based interventions. The purpose of this article is to provide a summary of research-based interventions for students with ASD. Our focus in this summary is on interventions that can be implemented in inclusive school settings by teachers and classroom support personnel. We first provide a general overview of interventions designed to reduce challenging behavior, teach communication skills, and improve social relationships. This is followed by a discussion of the obstacles to intervention implementation that may be present in school settings. Finally, we conclude by offering a list of intervention guidelines.

PUBLIC schools should provide an ideal mechanism for delivering interventions for autism, as children are in school for many hours a day and for the majority of their developing years. This provides opportunity to deliver an intensive, comprehensive intervention focusing on improving communication and socialization, and expanding the autistic child's interests. Further, if the educational program is coordinated with parent education, a substantial portion of the child's day can be covered with intervention in the natural environment. Such intensive and coordinated programs correspond with recommendations made by the [National Research Council \(2001\)](#) for comprehensive intervention for autism. Yet, delivering these services through the school system is challenging. Research findings related to addressing these challenges are described in detail in this article.

The number of public school children in the United States diagnosed with an autism spectrum disorder (ASD) has increased and may now be as high as 1 case per 110 students ([Center for Disease Control, 2010](#)). Students with ASD often fail to develop meaningful social relationships with teachers and classmates, may struggle to communicate (in some instances totally lacking spoken language), and are likely to engage in challenging behavior, ranging from tantrums to self-injury, aggression, and property destruction (*DSM-IV-TR*; [American Psychi-](#)

[atric Association, 2000](#); [National Research Council, 2001](#); [Sigafos, Arthur, & O'Reilly, 2003](#)).

Despite these challenges, the Individuals with Disabilities Education Act (IDEA; 2004) and the No Child Left Behind Act of 2001 (P.L. 107-110, Section 1001) require that schools implement research-based practices in the least restrictive environment (LRE). The LRE is often deemed to be the general education classroom and the primary intervention agent is often the classroom teacher ([Fisher & Meyer, 2002](#)). Ensuring that students with ASD receive effective intervention in the LRE will depend, in part, on the extent to which teachers and school personnel are prepared to implement research-based interventions ([Boardman, Arguelles, Vaughn, Hughes, & Klingner, 2005](#); [Ochs, Kremer-Sadlik, Solomon, & Sirota, 2001](#)).

The challenges presented by these students and the legal requirements to implement research-based practices in the LRE support the need for summaries of research-based interventions suitable for inclusive school settings. Additionally, teacher training programs need to be designed that provide classroom teachers with the required skills and expertise. For example, because symptom severity varies immensely across the autism population, it is critical that teachers understand the importance of carefully defining and measuring behaviors and developing intervention plans based on the symptom presentation of individual students.

Thus, the purpose of this article is to provide a summary of research-based interventions for students with ASD in a variety of areas. The focus in this summary is on

interventions that can be implemented in inclusive school settings by teachers and classroom support personnel. We first provide a general overview of interventions designed to reduce challenging behavior, teach communication skills, and improve social relationships. This is followed by a discussion of the obstacles to intervention implementation that may be present in school settings. Finally, we conclude by offering a list of intervention guidelines.

Challenging Behavior

Challenging behaviors may impede academic instruction, limit opportunities for social interaction, and cause physical injury (Sigafos et al., 2003). Children with ASD engage in more severe and frequent challenging behavior than typically developing children (Matson, Wilkins, & Macken, 2009), and without appropriate intervention, these behaviors tend to persist across an individual's lifespan (Murphy et al., 2005). A large body of intervention research targeting challenging behavior has focused on understanding the environmental conditions most commonly associated with challenging behavior. Then, interventions are designed to alter the environment in order to support and encourage appropriate behavior (Conroy, Dunlap, Clarke, & Alter, 2005; Horner, Carr, Strain, Todd, & Reed, 2002; Machalicek, O'Reilly, Beretvas, Sigafos, & Lancioni, 2007). This approach has two main components, a Functional Behavioral Assessment (FBA) followed by a function-based intervention.

Functional Behavioral Assessment of Challenging Behavior

The FBA is a problem-solving process used in the treatment of challenging behavior. This assessment goes beyond merely describing the appearance, form, or topography of behavior and is designed to identify the contextual and social variables that occasion and maintain an individual's challenging behavior. This broader perspective offers a better understanding of the function or purpose behind student behavior by focusing on determining "why" a student misbehaves instead of simply "how" a student misbehaves. Behavioral intervention plans based on FBA results have been shown to outperform behavioral interventions created without input from this process. Therefore, teachers need to know that input from FBA procedures should be integrated throughout developing, reviewing, and revising behavioral intervention plans (for reviews, see Hanley, Iwata, & McCord, 2003; Matson & Minshawi, 2007; Matson & Nebal-Schwalm, 2007).

FBAs are conducted by combining observations of the student in the setting in which challenging behavior occurs (natural environment) with input from stakeholders who interact with the student frequently. Teachers can collect preliminary FBA data by making a note of environmental changes that precede challenging

behavior (often called "antecedents") as well as the contingent consequences following the behavior. For example, following the occurrence of aggression, the teacher should note what happened in the classroom right before the student was aggressive (e.g., worksheets were passed out) and what happened immediately following the aggression (e.g., student sent to time-out). In this way potential behavior-outcome contingencies can be hypothesized. In this case, because passing out worksheets was the antecedent and being sent to time-out resulted in a temporary break from academic work, the hypothesis might be that the student is engaging in aggression in order to avoid work. We would say then that "the function of aggression is escaping task demands" or that "aggression is maintained by work avoidance." Once the antecedents and consequences for challenging behavior have been identified and a function is hypothesized, an intervention designed to alter behavior-outcome contingencies and/or relevant antecedent events can be implemented. An example FBA form is included in Appendix A (both a completed form and an uncompleted form). As can be noted, behaviors can be analyzed according to time, place, antecedent (before), and consequence (after). The teacher can then assess for patterns within the data and develop a data-based intervention plan. Common functions of problem behavior involve avoidance or escape from tasks, access to desired items, and obtaining attention (cf. Iwata et al., 1994). It should also be noted that, while some children exhibit challenging behavior for attention-seeking purposes, this is less common in children with autism. For this reason, it is important that teachers understand that using time-out, exclusion from the classroom, sending a child to the principal's office, and other isolating strategies may actually function as a reward for challenging behavior.

Function-Based Challenging Behavior Interventions

Machalicek et al. (2007) reviewed challenging behavior interventions that have been evaluated in school settings and identified a number of potentially successful function-based interventions including differential reinforcement, modified instructional schedules or demands, and teaching communication to replace challenging behavior. Differential reinforcement involves simply reinforcing (rewarding) desirable behaviors (e.g., sitting at desk working) and withholding reinforcement following the challenging behaviors (Cooper, Heron, & Heward, 2007). Differential reinforcement may be most effective when the behavior selected for reinforcement is incompatible with the challenging behavior. For example, by reinforcing a student for staying seated, elopement (i.e., running away from the classroom) can be decreased because elopement and remaining in one's seat cannot

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