Effective Strategies for the Inclusion of Children With Autism in General Education Classrooms

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Abstract

Successful inclusion of students with autism spectrum disorder (ASD) in general education classrooms can be challenging and may require additional supports. This article provides information on recent trends in autism intervention research and a review of research that has addressed individualized and systemic interventions for promoting inclusion. Response to intervention and schoolwide positive behavior support are reviewed as organizational/ systems strategies relevant to preventing problems and improving social and academic outcomes for students with ASD. Additional individualized strategies that can be implemented within these models are described. A discussion of future research directions is provided.

Inclusion for Students With Autism Spectrum Disorder (ASD)

ASD is a range of complex neurodevelopment disorders, characterized by social impairments, communication difficulties, and restricted, repetitive,

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and stereotyped patterns of behavior (American Psychiatric Association, 2000). Although ASD varies significantly in character and severity, it occurs in all ethnic and socioeconomic groups and affects every age group. The hallmark feature of ASD is impaired social interaction resulting in individuals with ASD not being able to communicate ideas and feelings, not understanding what others feel or think, and lacking empathy toward others (National Research Council, 2001). Despite the efforts of numerous scientists, the cause of ASD is still unknown, but it is likely that genetics and environment play a role.

Prevalence rates of ASD over the last 30 years have shown a dramatic and alarming increase in diagnosis and are now second in frequency only to mental retardation among the serious developmental disorders (Blaxill, 2004; Newschaffer et al., 2007). Rates in the United States have increased from less than 3 per 10,000 children in the 1970s to between 34 and 93 children per 10,000 in the 2000s (Manning et al., 2011; Ritvo, 1989; Rutter, 2005). A recent study out of South Korea reported a considerably higher figure of about 1 in 38 (i.e., 260 out of 10,000) children diagnosed with ASD (Kim et al., 2011). With regard to the functioning level of children diagnosed with ASD, studies have found that as many as 50% of all children diagnosed with autism are high functioning (i.e., of average or above average intelligence; Honda, Shimizu, Misumi, Niimi, & Ohashi, 1996; Kielimen, Linna, & Moilanen, 2000). Recent data suggest that the percentage of children classified with high-functioning autism has increased from 24.6% prior to 1998 to 43.9% post 1998 (Fombonne, 2005).

The range of impairment and the increase in the prevalence of autism present great challenges to the educational system. Across the United States, schools have reported an average increase of more than 800% since 1992 in the number of children with ASD being served in the educational system (Individuals With Disabilities Education Act [IDEA], 1997). The research related to educational and behavioral interventions for children with ASD is extensive, including various case studies, experimental studies, and theoretical orientations, all of which do not adequately offer guidelines for providing best practice (Olley, 1999). In addition, the popular media including celebrities and the Internet will often advocate for new, unproven, and perhaps unsafe interventions. Given that there is no well-established consensus regarding the appropriate educational practice for students with autism, school districts often need to make difficult decisions about the programs that they choose to implement (Dunlap, Iovannone, & Kincaid, 2008).

The purpose of this article is to provide a review of evidence-supported strategies for facilitating the educational inclusion of students with ASD.

First, a description of trends in research within inclusive environments of children with ASD will be briefly reviewed. Second, intervention strategies that have been empirically documented as successful for including students with autism in general education classrooms will be presented. More recently, efforts have been made to change how schools include and support students by focusing on the overall school environment or system. Therefore, a latter section of this article will focus on those strategies that incorporate systemic and individual features. Last, a discussion of future areas of research in facilitating the inclusion of students with autism will be presented.

Research in Typical Environments

In a descriptive study of intervention research, Stichter, Clarke, and Dunlap (2004) evaluated the degree to which the intervention research literature was incorporating functional assessment and antecedent-based strategies as well as the extent to which studies were achieving ecological validity by conducting the research with typical intervention agents (e.g., teachers, parents) and in the context of typical (largely inclusive) settings. Research articles from 10 journals with children identified as diagnosed with a developmental disability (including ASD) or emotional behavioral disorder were reviewed. Results indicated a substantial increase in assessment-based interventions (from approximately 10% in the 1980s to more than 50% in the 1990s). However, the authors noted a decline in the use of natural intervention agents, such as teachers, and a decline in research conducted in primary settings (i.e., homes, schools, community). Given the acknowledged importance of inclusion for social development, this trend could be seen as reason for concern.

A more recent trend analysis was conducted by Crosland, Clarke, and Dunlap (in press) to document the contextual characteristics of intervention research conducted with individuals with ASD between the years 1995 and 2009 in three leading journals (*Journal of Autism and Developmental Disorders, Journal of Applied Behavior Analysis*, and *Focus on Autism and Developmental Disabilities*). Data were collected based on the age of participants, cognitive and communicative functioning levels, setting, and ecological variables. Results indicated that the overall number of intervention articles increased, and the percentage of articles that included children younger than 6 years increased from 21% to 36% over the 15-year period. A small increase in the percentage of articles that included children with typical cognitive and communicative function was noted, but the increase was not comparable with the suggested number of children classified with higher functioning autism

(43.9%; Fombonne, 2005). A slight upward trend was noted in the percentage of intervention studies conducted in a typical physical context, although the percentage was still less than 50%, whereas no trends were evident for typical activity or social contexts. Less than 40% of studies were reported as being conducted in the child's primary environment (i.e., home, school), whereas a majority of interventions (>60%) were conducted in clinic/inpatient settings. This may be viewed as discouraging because clinical settings tend to be limited in terms of external and ecological validity.

Strategies for Achieving Successful Inclusion

Individualized Strategies

Approximately 10 years ago, Harrower and Dunlap (2001) provided a discussion of effective procedures for supporting children with ASD in general education classrooms. They included a review of research-based strategies designed to help individual students with ASD to participate successfully in these inclusive educational settings. The following synopses of individualized strategies are extracted largely from Harrower and Dunlap's discussion.

Antecedent procedures. Antecedent procedures involve manipulating some aspect of the environment to evoke a desired response or make an undesirable behavior less likely to occur (i.e., prevent and reduce challenging behavior). These procedures are proactive as they involve altering environments or routines prior to the occurrence of problem behavior (Kern, Sokol, & Dunlap, 2006). Antecedent procedures that have been used specifically with students with autism in general education classrooms include priming, prompt delivery, and visual schedules. Priming consists of allowing a student to preview information or activities before the student actually engages in that activity (Wilde, Koegel, & Koegel, 1992). A student can preview future events such as a fire drill, substitute teacher, field trip, or rainy day schedule, so they become more predictable (Schreibman & Whalen, 2000). Priming can facilitate the inclusion of students with autism as it links individual instruction to larger classroom group activities, a typical feature of general education classrooms. Research has shown priming to be effective in increasing social interaction with typical peers (Zanolli, Daggett, & Adams, 1996) and preparing young students for school field trips (Ivey, Heflin, & Alberto, 2004). Video priming (i.e., using videotaped instruction) has also been shown effective in decreasing challenging behavior during community school trips (Schreibman & Whalen, 2000).

Prompting strategies have been successful in supporting the inclusion of students with autism. Prompts that supplement the general instructional routine are often needed to elicit responding to academic or behavioral activities for students with autism. Sainato, Strain, Lefebvre, and Rapp (1987) compared two prompting strategies to facilitate school transition times: a peer buddy prompting condition and a teacher prompting condition. Both conditions resulted in increases in appropriate behaviors while the teacher prompting condition was found to be superior for all transition settings. In a study conducted by Handlan and Bloom (1993), peers who prompted interactions with students with ASD were able to increase the interactions with students with ASD. This prompting or coaching also generalized outside of the confines of the study to include the playground, cafeteria, all educational settings, and home.

Visual schedules have been used as a strategy to increase predictability for students with autism. Schedules can be used to visually communicate upcoming events, facilitate transitions between activities, and increase student independence. Hall, McClannahan, and Krantz (1995) used a picture book schedule to describe the daily general education classroom activities for three students with disabilities, including one with autism. Results indicated that the students followed their activity schedules 90% to 100% of the time and required fewer prompts from classroom aides. MacDuff, Krantz, and McClannahan (1993) and Bryan and Gast (2000) found increases in on-task and on-schedule responding with students with autism via the use of picture activity schedules.

Delayed contingencies. For students with autism to be successful in general education classes, some degree of independent academic functioning is necessary. Prior research has indicated that whereas successes have occurred in increasing independence under close adult supervision, removal of supervision has resulted in the reappearance of challenging behavior and decreases in appropriate behavior (Marholin & Steinman, 1977; Stahmer & Schreibman, 1992). The failure to maintain behavioral gains may be the result of the removal of or decrease in contingencies, such as positive reinforcement. Studies have examined the use of delayed and unpredictable contingencies to facilitate the maintenance and generalization of behavior in the absence of direct supervision (Dunlap & Johnson, 1985; Dunlap, Koegel, Johnson, & O'Neill, 1987; Dunlap, Plienis, & Williams, 1987). Dunlap and Johnson (1985) used an unpredictable schedule of supervision with three children with autism. Results indicated that levels of on-task behavior and productivity were higher during periods of no supervision after the use of an

unpredictable schedule when compared with when a predictable schedule of supervision was in place.

Self-management strategies. Components of self-management include student selection of goals, student's own self-observation and recording of behavior, and the student administering his or her own reinforcement. Self-management strategies promote classroom independence by shifting the responsibility of behavior management from the teacher to the student. Self-management has been shown to promote independent functioning even to the point of a student no longer needing a one-on-one aide and showing less reliance on the teacher (Koegel, Harrower, & Koegel, 1999). With less dependency on adults, students have more opportunities to interact with classmates and be more involved in classroom activities. Callahan and Rademacher (1999) found significant increases in on-task behavior and independent academic functioning with the use of self-management procedures for a high-functioning second-grade student with autism in a general education setting. Several other studies have found similar results by improving social skills, social interactions, and independent work skills with the use of self-management procedures with students with autism (Koegel, Koegel, Hurley, & Frea, 1992; Mancina, Tankersley, Kamps, Kravits, & Parrett, 2000; Sainato, Strain, Lefebvre, & Rapp, 1987).

Peer-mediated interventions. Peer-mediated interventions emphasize the involvement of typically developing peers as socially competent facilitators to promote appropriate communicative and social behaviors (Strain, Kohler, & Goldstein, 1996). As a way to improve social reciprocity in more natural social contexts, peer-mediated interventions have been found effective in providing social learning opportunities through peer interaction, peer modeling, and peer reinforcing. Peer tutoring (i.e., pairing two students) has been used to improve on-task behavior, math performance, and social interactions for children with disabilities in inclusive classrooms (DuPaul & Henningson, 1993; Locke & Fuchs, 1995). Classwide peer tutoring involving the pairing of all children in the class has resulted in gains in reading fluency, reading comprehension, and social interactions between students with autism and their peers (Hundert & Houghton, 1992; Kamps, Barbetta, Leonard, & Delquadri, 1994). More sophisticated uses of peer-mediated strategies have included training typical peers to implement pivotal response training (PRT; Pierce & Schreibman, 1997), incidental teaching (McGee, Almeida, Sulzer-Azaroff, & Feldman, 1992), and monitoring strategies (Morrison, Kamps, Garcia, & Parker, 2001). Morrison et al. (2001) combined self-monitoring with peer-mediated strategies to improve the social interaction of four

elementary school students. The combination intervention resulted in increases in requesting, commenting, and sharing behaviors during free-play time.

A standardized model for individualized interventions. One of the most common barriers to inclusion is problem behaviors, and when students with disabilities exhibit disruptive behaviors, they are unlikely to be introduced to or maintained in general education settings (Dunlap, Iovannone, Wilson, Kincaid, & Strain, 2010; Emerson, Kiernan, & Alborz, 2001). An effective, behavioral approach for addressing problem behaviors is positive behavior support (PBS), which is a well-established process of functional behavioral assessment and assessment-based intervention that has been implemented effectively with a wide range of students across diverse educational and community environments (Sailor, Dunlap, Sugai, & Horner, 2009).

Prevent–Teach–Reinforce (PTR) is a model of individualized PBS designed for use in classroom settings to meet the need for a standardized model of function-based behavioral intervention for students with severe behavior problems (Iovannone et al., 2009). The model includes a process for conducting a functional behavior assessment and then uses the results to develop intervention plans. It is a collaborative team-driven process facilitated by a consultant who has expertise in behavioral principles and guides the team through five steps.

> Step 1: Teaming establishes membership and an agreement on how the team will function, including methods of gaining consensus and assignment of responsibilities.
>
> Step 2: Goal Setting focuses on identifying and defining the social, behavioral, and academic targets. The step includes the development of a practical tool for daily measurement of the target behaviors, the Behavior Rating Scale (BRS).
>
> Step 3: PTR Assessment (functional behavioral assessment) includes direct and indirect observations covering three categories relating to antecedent variables (Prevent), function and replacement variables (Teach), and consequence variables (Reinforce). A function-based hypothesis is developed based on the information derived from the assessment.
>
> Step 4: Intervention requires the team to select interventions that are matched with the hypothesis and represent each intervention component (i.e., PTR). Step 4 includes a plan for training and coaching adults to implement the strategies as intended. Fidelity of support plan implementation is evaluated during this step.

Step 5: Evaluation uses the BRS data to make decisions about the plan's effectiveness and subsequent steps.

The model's manual has been published and provides detailed descriptions of each step as well as tools to be used by teams to collaboratively develop an effective function-based support plan (see Dunlap, Iovannone, Wilson, Kincaid, Christiansen, Strain, & English, 2010).

PTR was systematically evaluated with more than 200 students with various diagnoses (including students with autism) across five school districts in two states. The results indicated that students who received the PTR intervention showed significantly greater improvements in social skills, behaviors, and academic engagement than did their counterparts who received typical services (Iovannone et al., 2009). PTR received high social validity ratings, and teachers were able to implement the interventions with fidelity. Students included in the study were placed in a variety of settings, including 45% in general education.

Strain, Wilson, and Dunlap (2011) specifically evaluated the PTR model with three students diagnosed with autism who spent the majority of their time in general education classrooms. The students' problem behaviors were serious and included aggression, property destruction, obsessive compulsive behaviors, loud outbursts, and suicidal threats. The implementation of the PTR model resulted in rapid decreases in problem behaviors and improvements in task engagement for all three children. The teachers implemented the interventions with high fidelity immediately after training and during follow-up suggesting that the interventions were feasible to implement in the general education classroom.

Organizational/Systems Change Strategies

One key variable for the success of students with ASD in inclusive settings is the overall school environment. The philosophical practices and policies at a school are instrumental in creating the level of receptivity to the general education inclusion of students with disabilities (including students with ASD), and procedures that define identification, assessment, and intervention strategies can determine the extent to which successful inclusion is feasible. In short, the school context in which inclusion is considered can be as important or more important in achieving success than the integrity of the specific procedures that are implemented.

Over the past 10 to 15 years, there have been marked developments in school restructuring and school systems change that have major implications

for the practice of inclusion. A number of these developments have the potential to affect opportunities for inclusion of students with ASD. Therefore, the focus of this section is on large-scale, organizational initiatives that involve systems change and the deployment of research-based interventions in support of inclusive education. The two initiatives we will discuss are response to intervention (RtI) and schoolwide PBS (SW-PBS), which, in fact, are closely related. Both initiatives have a good deal of data testifying to the benefits they can offer for students who have disabilities or who are at risk for disabilities. In addition, both are supported by research and technical assistance funding from the federal government and from agencies in many states. However, it is important to acknowledge from the outset that neither initiative is specific to ASD and that there is no direct research evidence (to our knowledge) that relates the initiatives to specific benefits for students with ASD. The initiatives are presented in this section for two reasons: (a) They are becoming very common in schools throughout the United States (and elsewhere) and (b) they contain clear logic that links the practices to obvious implications for inclusion and to educational benefits for students with ASD.

RtI. RtI has been described as an approach to establish and redesign teaching and learning environments to improve effectiveness and efficiency for all students and educators (Sugai, 2007). RtI is a problem-solving and decision-making model based on a multitiered prevention framework that has been common in public health and has also appeared in education and early intervention (e.g., Simeonnson, 1991). RtI appeared as a policy under the Individuals With Disabilities Improvement Act of 2004 (IDEA, 2004), and its conceptual and empirical foundations are derived from applied behavior analysis, curriculum-based measurement, and precision teaching. RtI is characterized by five defining features: (a) universal screening to identify students at risk, (b) ongoing progress monitoring to identify students who might need additional supports, (c) a continuum of evidence-based intervention practices that vary in intensity and are applied in accordance with individual student needs, (d) data-based decision making and problem solving, and (e) implementation fidelity for each level of the model to ensure that practices are implemented with accuracy and consistency (Brown-Chidsey & Steege, 2005; Fuchs & Fuchs, 2007; Gresham, 2005; Gresham et al., 2005; Severson, Walker, Hope-Doolittle, Kratochwill, & Gresham, 2007).

The majority of RtI efforts have focused on academic curriculum and instructional practices mainly with regard to learning disabilities; early reading/literacy, including peer tutoring; and phonics interventions. Studies evaluating components of RtI have shown improvements in reading fluency with elementary students with reading deficits (Daly, Martens, Hamler, Dool,

& Eckert, 1999; Vaughn, Linan-Thompson, & Hickman, 2003). Although early efforts of RtI have focused on academic practices, researchers have suggested that the RtI framework could apply to social-emotional and behavioral disorders (Fairbanks, Sugai, Guardino, & Lathrop, 2007; Fox, Carta, Strain, Dunlap, & Hemmeter, 2010; Sugai et al., 2000). The core features of RtI are represented in SW-PBS practices, including a major emphasis on prevention (Sugai, 2007), and they have been described as a model for preventing the escalation of problem behaviors of children with ASD (Dunlap, Strain, & Fox, in press).

SW-PBS. SW-PBS is a systemwide three-tiered prevention model that includes primary (universal systems strategies for all students), secondary (interventions for specialized groups, classrooms, or students with at-risk behavior), and tertiary (interventions for students with severe behavioral problems) levels of support (Horner & Sugai, 2000; Lewis & Sugai, 1999; Sailor et al., 2009). Therefore, all students receive supports at the universal or primary tier. If the behavior of some students is not responsive, then more intensive behavioral supports are provided at the secondary or tertiary tiers. There are compelling reasons to believe that building a positive school culture at the universal level (entire school) can have a significant impact on students with ASD in inclusive settings (Freeman et al., 2006). Successful SW-PBS incorporates findings from organizational behavior management designed to increase capacity of organizations to facilitate and maintain systems change (Sugai & Horner, 2002). These strategies include gaining administrative support from school leaders, building capacity, sustaining and expanding funding, data-based decision making, and team decision making (George & Kincaid, 2008).

The implementation of effective SW-PBS can result in fewer students that require intensive supports leading to increased resources to address instructional and behavioral needs (Luiselli, Putnam, Handler, & Feinberg, 2005). As many students with ASD require additional supports, a school that is effectively implementing SW-PBS should be more readily able to provide effective empirically valid behavioral, social, and academic supports and make more informed data-based decisions on the success of individual students while facilitating inclusionary practices. General recommendations are provided for secondary and tertiary intervention strategies for including students with ASD in general education classrooms. These might include placing furniture so that students understand the environment and their expectations for each area of the classroom, having a predictable sequence of activities (Rogers, 1999), utilizing visual schedules (Dettmer, Simpson,

Myles, & Ganz, 2000), providing visual instructions for independent activities, and minimizing distractions such as loud noises.

Within the SW-PBS model, secondary interventions have been successful in improving inclusion and preventing the need for more intensive interventions for students with ASD. Secondary interventions might include social skill groups or increased reinforcement contingencies to improve problem behavior. Two examples of secondary interventions include PRT and CICO (check-in/check-out). PRT (Koegel & Koegel, 2006) is a naturalistic intervention model derived from the principles of behavior analysis. Instead of targeting individual behaviors one at a time, PRT targets pivotal areas of a child's development such as motivation, self-management, social initiations, and responding to multiple cues. Motivational strategies could include student choice, task variation, the use of direct and natural reinforcers, and providing clear instructions. CICO has been shown effective in reducing problem behavior and increasing academic engagement (Chafouleas, McDougal, Riley-Tillman, Panahon, & Hilt, 2005; Crone, Horner, & Hawken, 2004; Filter et al., 2007; Simonsen, Myers, & Briere, 2010; Stein, 1999; Todd, Campbell, Meyer, & Horner, 2008). The CICO program is a daily system in which a student checks in with a designated adult in the morning to develop behavioral goals, then carries around a point card throughout the day that provides opportunities for adult feedback on expected behaviors. The student then checks out at the end of the day by giving the point card to the designated adult (i.e., reinforcement for expected behavior is provided typically via a token economy system), and the point card is taken home to be signed by the parent. Teacher implementation fidelity with the CICO intervention was found to be high, as was teacher acceptability and perceptions of the program's effectiveness (Filter et al., 2007; Todd et al., 2008). Tertiary interventions may be needed for more intensive behavior problems and involve a functional assessment of problem behavior and the implementation of individualized intervention plans based on the identified function. PTR is an example of a standardized model of a tertiary intervention.

Importance of leadership. RtI and SW-PBS require clear leadership functions to be implemented effectively. One example of a model that is explicitly focused on administrative practice for promoting inclusion is the STAR approach. The STAR approach is a four-step schoolwide model for supporting inclusion in schools (Munk & Dempsey, 2010). STAR stands for *S*et the tone (establish a culture based on equality, democracy, and valuing of differences), *T*ranslate research to practice (use effective practices in blended classrooms), *A*rrange for collaboration between professionals, and *R*eflect on process and outcomes (evaluate successes and remedy limitations). The

model brings school administrators and all members of the education team together to help all students make progress toward learning standards and align students' individual education plans (IEPs) with the general curriculum. It is recommended that schools implementing this approach also implement RtI to help all students make progress toward learning standards. The STAR approach incorporates similar strategies of SW-PBS, including the importance of teaming, selecting appropriate accommodations, and effective monitoring of progress of students.

Future Directions and Conclusion

There are many strategies that support the inclusion of students with autism in the general education classroom (Harrower & Dunlap, 2001). Even students with severe autism can be included if necessary and sufficient supports are provided (Harrower & Dunlap, 2001). Studies have implemented diverse interventions, ranging from antecedent procedures to delayed contingencies, self-management programs to peer-mediated strategies. Standardized models of individualized intervention, such as PTR, provide teachers with a clear process for developing and implementing specific strategies to improve student problem behavior and promote inclusion. Combined, these studies provide a valuable source of intervention options that would likely result in improvement in any student in need of classroom support.

A recent focus on school systems change may encourage greater receptivity to inclusion for students with ASD, which may facilitate the successful implementation of specific procedures in the classroom. The proactive approach of school systems change initiatives has the potential of improving efficiency, which could result in the provision of additional resources for successful inclusion.

There continues to be a need for more research in typical settings and contexts that students contact across the school day. Very few studies have been conducted in the classroom during typical daily routines and activities with the teacher serving as the behavior change agent. This leads to a lack of generalizability of interventions conducted in less relevant contexts (clinic, classroom pull out). It is also important for researchers to include greater diversity of students with ASD, including students with a variety of behavioral and intellectual challenges (Dunlap & Kern, 1997). Widening the age range from mainly elementary education students to secondary-level (middle and high school) students is needed to determine if strategies are effective and feasible for students of all ages and grades.

There is clearly a need for standardized models, such as a model for autism inclusion, to fully support the inclusion of students with ASD. Such a model would need to be cost effective, feasible, and replicable and have the ability to be widely disseminated. It will also be crucial for future studies to continue evaluating systems change interventions and the potential impact on individual interventions.

The increasing numbers of students with ASD present tremendous challenges to the educational system. Inclusion of students with autism is important in improving social outcomes (Fryxell & Kennedy, 1995). Research that continues to focus on the impact of standardized models and systems change along with the implementation of specific strategies should improve the effective inclusion of students with ASD.

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