Support for Children with Developmental Disabilities in Full Inclusion Classrooms Through Self-Management

Lynn Kern Koegel
University of California–Santa Barbara

Joshua K. Harrower
University of California–Santa Barbara

Robert L. Koegel
University of California–Santa Barbara

Abstract: The literature has suggested that without the implementation of support procedures, placements of children with severe disabilities in full-inclusion classrooms are often unsuccessful. This study assessed whether a support person who taught young elementary school students to use self-management procedures and then faded involvement with them would be effective in increasing these students' appropriate performance on schoolwork tasks and reducing disruptive behavior in full inclusion classrooms. The percentage of time the children engaged in appropriate performance of schoolwork tasks and disruptive behavior was recorded during in-class periods. Data were collected over a 9-month period in a multiple baseline design during the academic year. The results showed that implementation of self-management resulted in high levels of appropriate performance of schoolwork activities, negligible levels of disruptive behavior, and complete elimination of time spent in time-out. Following the intervention, both appropriate schoolwork performance and disruptive behavior exhibited by the children with severe disabilities were within the range of the typical children in the classroom.

Recent legislation and trends in social philosophy have resulted in an increase in the number of children with developmental disabilities being placed in full-inclusion classrooms. Although policy decisions have begun to result in a merging of special and general education, many general education teachers feel ill-equipped and insecure about having a child with disabilities in their classroom (Semmel, Abernathy, Butera, & Lesar, 1991), and the collaborative role between general and special educators has yet to be determined (Kennedy, 1997). Furthermore, although many children appear to improve in a variety of social and academic areas by being placed in a general education classroom (Kennedy, Shukla, & Fryxell, 1997; Shinn, Powell-Smith, Good, & Baker, 1997), without coordination of special support services, proximity itself often is not a guarantee for successful educational inclusion of children (Hanson, Gutierrez, Morgan, Brennan, & Zercher, 1997; Hunt & Goetz, 1997; Jenkins, Speltz, & Odom, 1985; Kellegrew, 1995; Kohler, Strain, & Shearer, 1996). For these reasons, we need additional research that demonstrates effective procedures for managing behavior and increasing the academic involvement of children with disabilities within the context of general education.

A number of studies have demonstrated the effectiveness of implementing positive behavior intervention techniques in the classroom as a means of providing support for the inclusion of children with special needs. Some studies have focused on the effects of setting, assessment, and intervention during structured and unstructured play periods to improve the social behaviors of students with disabilities while interacting with their nondisabled peers (Goldstein, English, Shafer, & Kaczmarek, 1997; Guralnick, Connor, Hammond, Gottman & Kinnish, 1996; Guralnick, Gottman, & Hammond, 1996; Jenkins et al., 1985; Kamps et al., 1992; Kohler et al., 1995; Odom, Chandler, Ostrosky, McConnell, & Reaney, 1992; Odom & Strain, 1984, 1986; Pierce & Schreibman, 1997; Russo & Koegel, 1977; Sainato, Goldstein, & Strain, 1992; Strain, 1983; Strain & Odom, 1986). Other studies have focused on increasing the opportunities for children with developmental disabilities to engage in academic tasks in inclusive settings by using procedures such as functional analy-

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sis and curriculum manipulation and/or modification (Cooper et al., 1992; G. Dunlap, Foster-Johnson, Clarke, Kern, & Childs, 1995; G. Dunlap, Kern-Dunlap, Clarke, & Robbins, 1991; Kern, Childs, Dunlap, Clarke, & Falk, 1994); use of cooperative learning groups to increase peer assistance (Hunt, Staub, Alwell, & Goetz, 1994); and peer tutoring (Kamps, Barbetta, Leonard, & Delquadri, 1994; Robertson & Weismer, 1997).

The intervention procedure known as self-management has been described as a viable technique for promoting independence in the classroom, because it shifts behavior management responsibility from the teacher to the student (L. K. Dunlap, Dunlap, Koegel & Koegel, 1991; King-Sears & Cummings, 1996; R. L. Koegel & Koegel, 1990; Reid, 1996), thus freeing teachers to concentrate on academics. The effectiveness of self-management programs has been well documented for individuals without developmental disabilities (Fantuzzo & Polite, 1990; Kirby, Fowler, & Baer, 1991; Olympia, Sheridan, Jenson, & Andrews, 1994; Stevenson & Fantuzzo, 1986). More recently, the usefulness of such procedures has been demonstrated with a broader population and a variety of target behaviors, such as:

- improving social and play skills for children with autism (L. Koegel, Koegel, Hurley, & Frea, 1992; R. L. Koegel & Frea, 1993; Stahmer & Schreibman, 1992);
- reducing disruptive behavior for children with autism (Newman, Tuntigian, Ryan, & Reinecke, 1997);
- improving social skills, increasing task engagement, and reducing disruptive and aggressive behavior for children and adolescents with serious emotional disturbance (G. Dunlap, Clarke, Ramos, Wright, Jackson, & Brinson, 1995; Ninness, Ellis, Miller, Baker, & Rutherford, 1995; Ninness, Fuerst, Rutherford, & Glenn, 1991; Shear & Shapiro, 1993); and
- improving problem solving and job-related social skills for adolescents with learning disabilities (LD; Shapiro, 1989).

A number of studies have focused on the use of self-management for children with developmental disabilities in segregated classroom settings for producing gains in academic responding in areas such as spelling, math, reading comprehension, sight-word vocabulary, neatness, schedule following, and homework completion (Carr & Punzo, 1993; Glomb & West, 1990; Lalli & Shapiro, 1990; Lam, Cole, Shapiro, & Bambara, 1994; McCurdy & Shapiro, 1992; Newman et al., 1995; Reid & Harris, 1993; Trammel, Schloss, & Alper, 1994). Also, a number of studies have demonstrated the generalization and maintenance of self-management skills initially taught in segregated settings and then transferred during the participants' part-time involvement in integrated settings (Gregory, Kehle, & McLaughlin, 1997; Hogan & Prater, 1993; Lonnecker, Brady, McPherson, & Hawkins, 1994; Mathes & Bender, 1997; Misra, 1992; Prater, Hogan, & Miller, 1992). Successful use of self-management techniques in integrated academic settings also has been described for improving the following:

- on-task behavior and academic productivity among children with LD (Maag, Rutherford, & DiGangi, 1992);
- peer interactions of children with behavioral problems (Falk, Dunlap, & Kern, 1996);
- social skills and disruptive behavior for children with autism (L. Koegel, Koegel, Hurley, & Frea, 1992);
- math fluency and engaged time among five children in fourth grade, two of whom had mild disabilities (McDougall & Brady, 1998); and
- on-task behavior among adolescents with LD (Prater, Joy, Chilman, Temple, & Miller, 1991).

There is a need for research documenting successful techniques that facilitate the full inclusion of children with severe disabilities who participate full time in general education classrooms. Further, we need to show that such techniques can be successful in full-inclusion classrooms throughout the school day without the need for constant one-on-one supervision from a support person. Finally, we also need to demonstrate that these children can participate meaningfully in academic tasks with a level of academic engagement on a par with that of their typically developing peers.

The purpose of this study was to demonstrate a technique for teaching children with severe disabilities to participate meaningfully in general education classrooms. Specifically, we evaluated the effectiveness of using a temporary support person to teach children with developmental disabilities in full inclusion classrooms to use self-management procedures for appropriate schoolwork performance, and then fading the support person's involvement to promote student independence.

Method

PARTICIPANTS AND SETTINGS

The two children in this study participated in full inclusion kindergarten classrooms, each at a different public elementary school. Their school day was in session from 8:30 a.m. to noon, 5 days a week. No special education supports had been provided for either child, and within the first month of school, each child's general education teacher had requested assistance in developing an in-class program for the child.

Cory was 5 years old at the time of the study and had been diagnosed by his speech pathologist as having severe

language and cognitive disabilities. Although he was able to construct some intelligible simple sentences, he consistently scored in the 4th to 10th percentile on standardized speech and language test batteries, including the Arizona Articulation Proficiency Scale–Second Edition (Fudala & Reynolds, 1986), the Peabody Picture Vocabulary Test–Revised (Dunn & Dunn, 1981), and the Expressive One-Word Picture Vocabulary Test–Revised (Gardner, 1990). His behavior in the classroom, as reported by his teacher, consisted of frequent yelling, running around the classroom, singing loudly and out of context.

Jamie was 6 years old at the time of the study and had been diagnosed by his school psychologist as having severe cognitive and learning disabilities. He consistently scored in the 2nd to 21st percentile on batteries of standardized academic and intelligence tests, including the Leiter International Performance Scale (Leiter & Arthur, 1982) and the Woodcock-Johnson Psycho-Educational Battery–Revised (Woodcock & Johnson, 1989). Jamie's classroom behavior was reported to consist of periodic wandering around the classroom and daydreaming during work time. His teacher reported that her need to constantly redirect him to academic work disrupted ongoing class activities.

EXPERIMENTAL DESIGN

A multiple-baseline-across-participants design (Barlow & Hersen, 1984) was employed, with data collected over a 9-month period (essentially the entire academic year). Because the study was designed to investigate the generalized effects of an ongoing self-management intervention, a twice weekly 20-minute probe format was used to collect data throughout the study. Baseline data were collected over a period of 3 weeks (five probe sessions) for Cory and over a period of 5 weeks (nine probe sessions) for Jamie.

Baseline

Academic activities during all three phases of the experiment (baseline, intervention, and maintenance) took place under the regular kindergarten conditions, with no constraints placed upon the children or teachers. The specific classroom tasks varied slightly between children, with Cory's class typically being asked to cut, paste, and color pieces of paper that were to eventually form a small book of the child's work. Occasionally, the students were asked to print or trace letters on the pages. Additionally, a classroom-wide behavior management system was in effect in Cory's classroom, such that when students exhibited excessive noncompliance or disruptive behavior, they were placed in, or instructed to go to, a time-out chair in the corner of the classroom, where they were required to remain until they sat quietly for 2 consecutive minutes. The typical activity in Jamie's class consisted of coloring various outlined pictures in a coloring book and then printing or tracing letters on each picture.

Intervention

A plan for a positive behavioral support strategy using self-management was implemented by a support person (an undergraduate psychology student). Intervention procedures were based upon general self-management strategies (cf. Gregory et al., 1997; L. K. Koegel, Koegel, & Parks, 1992; R. L. Koegel & Frea, 1993; R. L. Koegel & Koegel, 1990; Stahmer & Schreibman, 1992). These procedures were implemented in two phases.

Support Person. The support person was an undergraduate psychology student who had read and thoroughly understood the manual *How to Teach Self-Management to People with Severe Disabilities* (L. K. Koegel, Koegel, & Parks, 1992), as well as two books: *Teaching Children with Autism* (R. L. Koegel & Koegel, 1995) and *Positive Behavioral Support* (L. K. Koegel, Koegel, & Dunlap, 1996). The support person began with a full-time one-on-one involvement in the classroom and then, following the procedures described below, faded gradually to the point of having no interaction at all with the target children (although he had no interaction with the children at the end of the study, he continued to go to the school sites approximately 2 days per week, 30 minutes per day, to be available to the teachers in case of an emergency).

Prompt Phase. The first prompted self-management phase consisted of two parts: a brief one-on-one practice period, followed by continued prompted self-management during the regular classroom activities. During this prompting phase, each day's academic activities were preceded by one-on-one prompting (for approximately 10 minutes) by the support person, wherein the child was prompted to discriminate and monitor the desired behaviors (appropriate schoolwork performance as instructed by the general education classroom teacher) and undesired behaviors (see "Participants and Settings" section for individually defined disruptive behaviors). This was accomplished as follows:

In order to ensure that the child understood desired behaviors versus undesired behaviors, the support person modeled the behaviors and then asked the child to imitate both the appropriate and inappropriate behaviors and then verbally identify each. For accurate discriminations, the children were provided social reinforcers on a continuous reinforcement schedule. This short period of prompting also included successive "practice" intervals (15 seconds, gradually increased to 4 minutes on successive days) while working on a school task.

During these practice sessions, the child was taught to place a mark (which could be exchanged for a reinforcer) in a printed box on a piece of paper after each interval of

time during which he successfully engaged in appropriate schoolwork performance. The child was rewarded with social reinforcers and small prizes such as stickers or small candies chosen by him for engaging in the appropriate behavior and accurate recording (i.e., the child's recording needed to match the support person's recordings of the behavior). For example, two prizes were given to the child by the support person when both the child and the support person rated the entire interval as having been appropriate, as a reward for appropriate behavior and for accurate self-evaluation. When both the support person and the child recorded the child's behavior as being inappropriate for any one part of the interval, one of the small rewards was given to the child for accurate self-evaluation. If the two recordings (support person and child) disagreed, no reward was given. These self-management with practice periods served to ensure that the instructions had been understood. During the first 10-minute practice session, both children learned to identify and record appropriate behaviors. Following each of the 10-minute practice periods, the children continued self-managing with prompting during the regular classroom academic activities. Throughout this phase of the study, the prompts were gradually faded out prior to beginning the second (no prompt) phase of intervention.

No Prompt Phase. During the no prompt phase, sessions did not include the previously mentioned practice periods. The children were given a wristwatch with a repeat chronograph function that signaled them to evaluate the preceding interval. Beginning with intervals of every 5 minutes, and gradually increasing to 20-minute intervals, both the support person and the child recorded the occurrence and nonoccurrence of appropriate schoolwork performance in the classroom. Initially, rewards were administered immediately after each interval had been rated by both the child and the support person. Then, after the first few 5-minute intervals, rewards were administered after every two intervals. Reinforcers were gradually delayed in this manner until rewards were being administered only at the end of each day's academic activity. Throughout this phase, the support person gradually faded physical proximity and number of interactions with the child to the point where interaction between them no longer occurred. By the end of the intervention phase, the children put on their own watches and independently self-administered the small rewards, which had been placed in the corner of the classroom.

Maintenance Phase

During the maintenance phase of the study, the self-management watch was removed. Also, the support person engaged in no interactions with the child. This phase thus was identical to the baseline condition.

DEPENDENT VARIABLES

An interval recording system (in continuous 15-second intervals) was used to record percentage of appropriate performance of schoolwork tasks as well as percentage of disruptive behavior. Both appropriate academic schoolwork and disruptive behavior could theoretically occur within the same 15-second interval. *Appropriate performance* on schoolwork tasks was defined as engagement in academic activities as assigned by the teacher that occurred within each interval. If a child worked inappropriately on the assigned class activity or ceased work on the activity without the teacher's approval, the interval was not counted as appropriate. *Disruptive behavior* consisted of any behavior occurring within the interval that either distracted other students or required the teacher to cease group or individual instruction in order to resolve the situation. Thus, behaviors that were scored as disruptions typically consisted of tantrums, leaving the seat or instruction area, and making loud out-of-context noises such as singing and yelling. If any of these behaviors occurred within an interval, that interval was scored as showing disruptive behavior. The percentage of intervals in which the child engaged in appropriate schoolwork activities and the percentage in which he engaged in disruptive behavior over the entire session was computed following each day's academic activities in order to measure any changes in behavior over time. In order to provide an index of the quality of Cory's classroom experience, we also recorded intervals in which the teacher sent him to time-out.

SOCIAL VALIDATION

To provide an index of the range of appropriate performance on schoolwork and disruptive behavior that would be expected to occur in kindergarten classrooms, seven children who were not diagnosed as having any disability were randomly selected from one of the target child's classrooms. These children's levels of appropriate schoolwork performance and disruptive behavior were recorded on randomly selected sessions during the baseline, intervention, and maintenance phases of the study, and the means and ranges were tabulated.

RELIABILITY

Using the same interval recording system, two undergraduate psychology students who were not aware of the purpose of the study independently recorded data for both of the dependent variables. Percentage of agreement between the observers on each variable was calculated by dividing number of agreements by total number of agreements plus disagreements, and multiplying by 100. Agreement was defined as identical recordings between observers on the data recording sheet, whereas disagreement was defined as

any discrepancy between the observers' recordings. Interobserver agreement was obtained during 14 of the classroom sessions throughout all phases of the experiment. For Cory, the mean interobserver agreement on the occurrence of appropriate schoolwork performance and disruptive behavior was 94% and 95%, respectively, and each had ranges of 88% to 100%. For Jamie, mean agreements for occurrence of appropriate schoolwork performance and disruptive behavior were 96% and 98%, respectively, with ranges of 90% to 100% and 93% to 100%. Interobserver agreement for recording intervals when the child was in time-out was 100%. For the index of appropriate engagement in schoolwork by the nondisabled children, interobserver agreement averaged 95%, with a range of 86% to 100%; interobserver agreement on disruptive behavior averaged 96%, with a range of 88% to 100%.

Results

APPROPRIATE SCHOOLWORK PERFORMANCE

The solid circles in Figure 1 display the percentage of intervals in which the child exhibited appropriate schoolwork during the baseline, intervention (prompt/no prompt), and maintenance phases for both children. During baseline measures for Cory, mean percentages of intervals engaged in appropriate schoolwork averaged around 55%. In contrast, intervals during the intervention phases show substantial increases for Cory, with an average of 90% during the prompt phase.

It is important to note that these high levels continued to maintain when prompts were removed. Further, data collected during the final (maintenance) phase of the study showed continued high levels of appropriate schoolwork after interactions between the support person and Cory were completely faded.

Similar results for Jamie can be seen also in Figure 1. During baseline, Jamie's percentage of intervals with appropriate schoolwork averaged around 50%. Data collected during the intervention for Jamie also showed substantial increases, averaging 95% during the prompt phase and remaining at that level when prompts were removed. Similarly, the final (maintenance) phase demonstrated continued high levels of appropriate schoolwork—consistently near 95% of the intervals—after interactions between Jamie and the support person were completely faded.

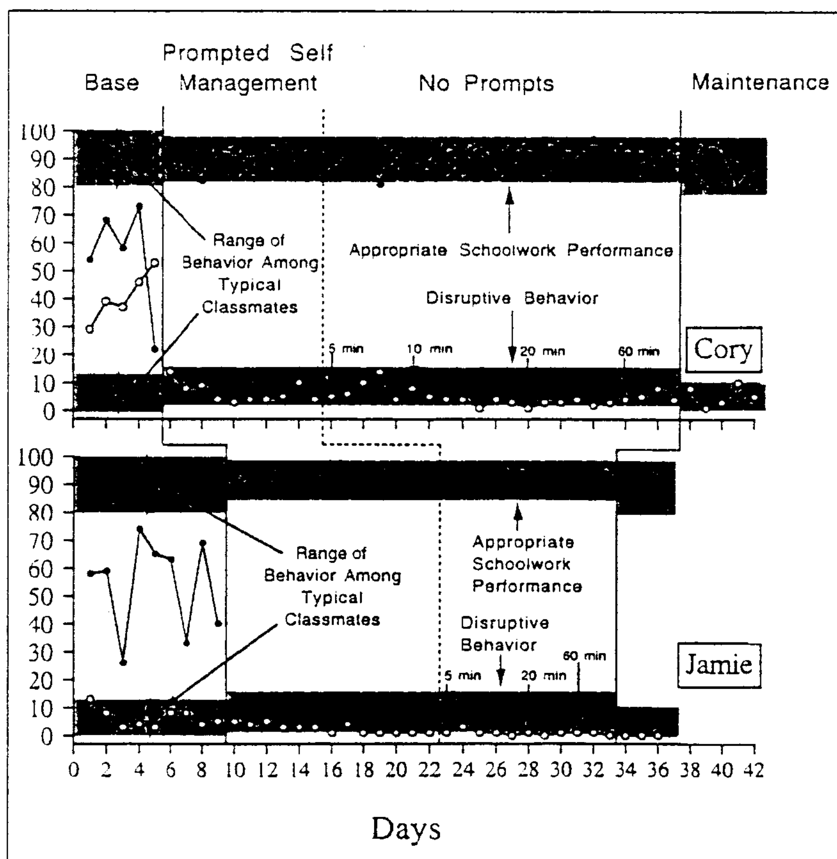

Figure 1. Percentage of intervals with appropriate schoolwork performance and disruptive behavior for Cory and Jamie.

SOCIAL VALIDITY

The composite data collected for the percentage of intervals the nondisabled peers appropriately engaged in the schoolwork are shown in the shaded areas of Figure 1. The data showed fairly consistent ranges across the three phases of the study in the percentage of intervals containing appropriate engagement in schoolwork, with baseline averaging 90% (range = 80% – 100%), intervention averaging 89% (range = 81% – 98%), and the maintenance phase averaging 89% (range = 79% – 98%). Although both Cory and Jamie exhibited much lower levels of engagement in the kindergarten schoolwork than did their nondisabled classmates during baseline, after the intervention, their amount of appropriate engagement in schoolwork was similar to those levels displayed by their nondisabled classmates.

DISRUPTIVE BEHAVIOR

The open circles in Figure 1 show the percentage of intervals in which the children engaged in disruptive behavior during the baseline, intervention, and maintenance phases. For Cory, baseline measurements showed high levels of disruptive behavior, which decreased during the intervention phase and remained at low levels during the maintenance phase. For Jamie, who showed relatively low amounts of disruptive behavior (5%–10% of the intervals) during baseline, decreases to virtually zero levels of disruptive behavior in most sessions occurred during the intervention phase and in all sessions in the maintenance phase after interactions with the support person were completely removed. Disruptive behavior was also fairly consistent among the nondisabled children, with baseline averaging 6% (range = 0% – 13%), intervention averaging 7% (range = 2% – 15%), and the maintenance phase averaging 6% (range = 0% – 10%).

TIME-OUT

The percentage of intervals in which Cory was in time-out are shown in Figure 2. During baseline, when his disruptive behavior was occurring at a high level, Cory spent an average of 18% of the intervals in time-out. Following intervention, and throughout the remainder of the study, when his disruptive behavior was within the range of that exhibited by the typical children (see disruptive behavior data in Figure 1), Cory's percentage of intervals in time-out decreased to zero, as was the case with the typical children (see time-out data in Figure 2). This was also true in the maintenance condition, when the support person was completely faded out.

Discussion

Overall, the results of this study suggest that teaching self-management procedures for appropriate schoolwork performance is an effective strategy for increasing the level of engagement in academic activities and reducing disruptive behavior of children with developmental disabilities who participate in general education classrooms. In addition, it is important to note that the procedures used in this study made no extra demands on the general education classroom teachers. Further, academic and behavioral gains of the participants were maintained following complete fading of the support person's assistance. These results support the use of procedures such as self-management that

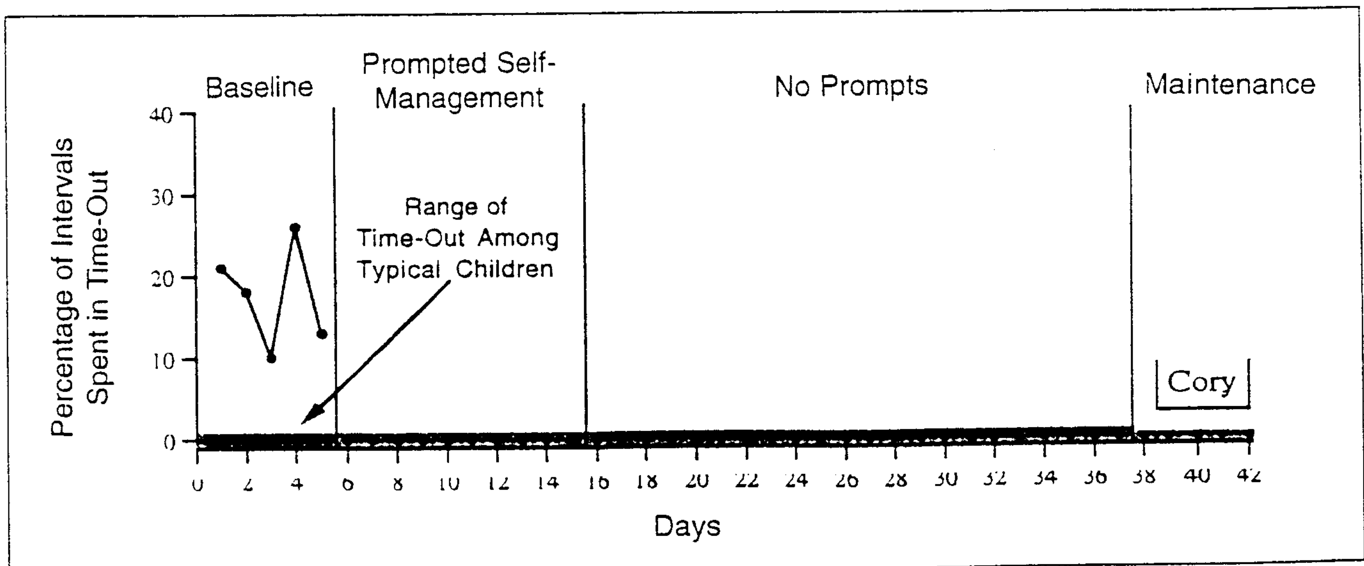

Figure 2. Percentage of intervals spent in time-out for Cory.

produce independence on the part of the child, thereby reducing the need for constant vigilance and support by special education personnel (Kern, Marder, Boyajian, Elliot, & McElhatten, 1997; Newman et al., 1997).

Although in the present study the children's work was acceptable at the kindergarten level without any specific modifications, in the future it may be important to include more children and to note the conditions necessary for continued academic involvement and success as the children move to more academically demanding grade levels. Further, although in this study the effect sizes were large, it would nevertheless be useful to assess the types of gains made by a large variety of children. Appropriate use of procedures such as partial participation (Nickels, 1996; Stainback, Stainback, Stefanich, & Alper, 1996), home/school coordination (L. K. Koegel, Koegel, Kellegrew, & Mullen, 1996), individualization of instruction (Falvey, Givner, & Kimm, 1996; Kohler et al., 1996; Nickels, 1996), and relevant teacher and staff inservice training for curricular revisions and adaptations are likely to provide for continued success throughout these children's educational progression (R. L. Koegel & Koegel, 1995; Russo & Koegel, 1977; Sailor, 1996; Stainback & Stainback, 1996). Within the constraints of the participation of these two children, results from the present study have supported the use of one procedure to increase appropriate academic involvement of children with developmental disabilities in full inclusion classrooms, with minimal extra demands upon the existing school staff and system.

One variable that may have contributed to the likelihood of success of the self-management procedures is that the support person had specific prior training in positive behavioral support procedures designed to decrease problem behaviors and improve academics (L. K. Koegel, Koegel, & Dunlap, 1996). The literature has suggested that the success of a child in a full inclusion program may be affected by the degree of sophistication of the support staff (Rock, Rosenberg, & Carran, 1995; Wood, 1995). At the present time, many school programs do not provide adequately trained staff in this area. However, when such staff are present, procedures such as those described in this study can be highly effective and durable.

Finally, one last variable that may have contributed to the success of the present program may relate to teacher attitude toward inclusion. All of the teachers in this study requested assistance with the children and worked cooperatively with the support person. Research has shown that teacher attitudes toward inclusion can be a significant variable in the success of a program (Minke, Baer, Deemer, & Griffin, 1996; Olson, Chalmers, & Hoover, 1997; Wood, 1995). The present study has provided preliminary data to suggest that coordinated efforts between general and special education personnel can be highly effective for the education of children with developmental disabilities in full inclusion settings.

ABOUT THE AUTHORS

Lynn Kern Koegel, PhD, is clinic director of the Autism Research Center at the Graduate School of Education, University of California at Santa Barbara. Joshua K. Harrower, MA, is a doctoral candidate in educational psychology, development and disabilities specialization, at the Graduate School of Education, University of California at Santa Barbara. Robert L. Koegel, PhD, is director of the Autism Research Center and a professor in the Counseling/Clinical/School Psychology Program and Special Education, Disability and Risk Studies Emphasis at the Graduate School of Education, University of California, Santa Barbara. Address: Robert L. Koegel, Counseling/Clinical/School Psychology Program, University of California, Santa Barbara, CA 93106-9490.

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