

Clinical Forum

Priming as a Method of Coordinating Educational Services for Students With Autism

Lynn Kern Koegel

Robert L. Koegel

William Frea

Israel Green-Hopkins

University of California, Santa Barbara



Without systematic specialized intervention, students who are diagnosed as having autism often exhibit disruptive behaviors and may have concomitant difficulties with academic performance in inclusive and mainstreamed settings. A number of researchers have focused on antecedent influences (prior events that influence behavior) and the manipulation of antecedent variables to reduce problem behavior and increase appropriate responding. For example, numerous studies have employed functional assessments to identify functional relationships between problem behaviors and antecedent variables in the environment (Dunlap, Foster-Johnson, Clarke, Kern, & Childs, 1995; Dunlap, White, Vera, Wilson, & Panacek, 1996; Koegel & Koegel,

1995; Koegel, Koegel, & Dunlap, 1996; Lee, Sugai, & Horner, 1999). The literature suggests that functional assessment procedures are effective in identifying those factors that produce and maintain problem behavior (Lee et al., 1999).

Presently, the use of antecedent manipulation by educators and families is not as common as might be expected considering the amount of research demonstrating the effectiveness of such procedures (Luiselli & Cameron, 1998). In addition to antecedents that occur just before the problem behavior, research also shows that antecedents may occur before the school day and provide a context for behavior problems during the school day. That is, current studies show that when a student is having academic

ABSTRACT Purpose: The importance of coordination of educational services has been well documented in the literature. For students with disabilities, coordinated programs result in more rapid acquisition of targeted behaviors and the increased likelihood of long-term maintenance of gains. The purpose of this study was to assess whether "priming" or exposing students with autism and disruptive behaviors to school assignments before their presentation in class would affect academic performance and problem behaviors.

Method: Two students diagnosed with autism who attended general education classrooms, both of whom exhibited numerous disruptive behaviors and low academic

performance, participated in this study. A repeated reversals design was used to monitor student progress.

Results: The results demonstrated decreases in problem behavior and increases in academic responding when priming sessions occurred.

Clinical Implications: Application is discussed in terms of a mechanism for speech-language pathologists to assist classroom teachers with a systematic educational coordination plan that can quickly produce improved school performance.

KEY WORDS: autism, homework, disruptive behavior, academic responding, listening comprehension

difficulties and/or behavior problems at school, both teachers and parents are consistent in reporting that deficiencies in coordination and communication across environments are present (Epstein, Munk, Bursuck, Polloway, & Jayanthi, 1999; Epstein et al., 1997). Therefore, the literature suggests the importance of coordination of services that focuses on providing consistent programs and setting events that may produce subsequent improvements in behavior and academic achievement at school.

One area of particular interest to educators and families is homework and other educational services outside of the student's classroom setting. These outside-of-classroom activities can be implemented either by the parent or by a special education service provider such as a speech-language pathologist. Previous studies concerning the effectiveness of academic activities implemented outside of the classroom setting have produced contradictory results. This may be due to the fact that most of the measures were self-reports and were difficult to interpret. However, there does appear to be a correlation between the amount of time a student engages in academic activities outside of the classroom and academic achievement.

For students with disabilities, numerous factors contribute to the ability to perform and complete work accurately outside of the classroom setting. For example, Salend and Gajria (1995) suggested guidelines designed to improve homework completion among students with learning disabilities. They emphasized the importance of parent involvement, an area that has been researched extensively in terms of its effects on homework completion and accuracy. Furthermore, Callahan, Rademacher, and Hildreth (1998) found that parent involvement in implementing a specific homework plan (such as a home-based self-management strategy) for at-risk students significantly increased the students' homework completion and homework quality. In addition, reviews of research on parent involvement in homework found that parent involvement enhanced academic achievement of students with disabilities and helped them develop positive attitudes toward homework that directly influence achievement (Hoover-Dempsey, Battiato, Walker, Reed, DeJong, & Jones, 2001). Thus, for children with disabilities, the literature emphasizes the importance of parental involvement.

Although there has been an increase in the research on homework practices of students with learning disabilities, it has been asserted that much of the research does not suggest specific intervention techniques concerning the specific types of parent involvement that may produce more effective outcomes (Callahan et al., 1998). Therefore, there continues to be a need for effective strategies to increase homework completion and accuracy to promote academic responding and academic success. Furthermore, Hoover-Dempsey et al. (2001) pointed out that, most importantly, empirical research investigating the nature and processes of interventions using parent involvement needs to be conducted to strengthen the evidence concerning homework practices. An additional problem that speech-language pathologists and other special educators may face is that a subgroup of parents are unable or unwilling to participate in coordinated educational efforts.

Another gradual change in education is that students with autism are increasingly being included or mainstreamed into regular education classes and are expected to engage in the same activities as their typically developing classmates. However, they often exhibit a wide variety of problem behaviors in the classroom, causing disruptions to general education classes as well as having severe consequences on their academic progress (cf., Callahan & Rademacher, 1999). Analyses of problem behavior in the classroom have shown that many are associated with curricular and instructional variables (Dunlap et al., 1996). For example, a number of researchers have discussed the functional relationships between the difficulty of tasks and the display of problem behavior in individuals with disabilities (Derby et al., 1992; Iwata et al., 1994; Lee et al., 1999). Further, effective academic interventions and manipulations such as student choice, meaningful outcomes, shorter assignments, and so on can have a direct effect on lowering problem behaviors (Dunlap & Kern, 1993; Koegel et al., 1996; Lee et al., 1999). However, in mainstream and inclusive settings, regular education teachers may not readily incorporate these types of strategies.


PURPOSE

Accumulating research is demonstrating a clear association between problem behaviors and academic performance (Epstein et al., 1997; Koegel, Koegel, & Surratt, 1992). In addition to problem behavior, students with disabilities have difficulties sustaining motivation, practicing effective study skills, and allocating and maintaining attention (Gajria & Salend, 1995). Therefore, there is a significant need to develop intervention techniques that attempt to solve the problem of disruptive behavior, as well as the inefficiency exhibited by students with disabilities during academic activities. Researchers have suggested structuring the academic activities outside of the classroom, including recruiting parental involvement and consistent teacher feedback to improve academic performance (Salend & Gajria, 1995). Thus, the purpose of the present study was to assess the effects of a program involving previewing or "priming" classroom assignments either at home or during special education services before they were presented in class on academic responding and problem behavior.

METHOD

Participants

Two students, both of whom were diagnosed with autism, participated in this study. The students were selected because, according to school personnel, they demonstrated problem behaviors in their regular education classroom settings that were interfering with the teacher's ability to conduct a lesson, and they were at risk for a more restrictive placement. All data were collected in regular education settings where problem behavior was



reported to occur. Individual student characteristics are described below.

Student 1. Student 1 was aged 5;6 (years;months) at the start of the study. He participated in full inclusion preschool and kindergarten classrooms with special education speech and language services. Because of his numerous and interfering problem behaviors, standardized testing was difficult and test results were variable. Although his communication was delayed, language samples demonstrated that he was able to combine words to make syntactically correct short sentences. He scored at the 18th percentile on the Peabody Picture Vocabulary Test (Dunn & Dunn, 1981). His global scale percentiles on the Kaufman Assessment Battery for Children (Kaufman & Kaufman, 1983) ranged between the 5th and 11th percentiles. However, cognitive areas on the Learning Accomplishment Profile (LAP, 1992) were 2–20 months below his age level. On the Leiter International Performance Scale (Leiter & Arthur, 1982), his nonverbal IQ was 4 months below his chronological age.

Student 1 also demonstrated a number of pragmatically inappropriate behaviors that were being targeted by his speech-language pathologist as well as by the child's individualized education plan (IEP) team. These included screaming words out of context (i.e., refrigerator, ChuckE Cheese, cheeseburger), laughing out of context, lying and rolling on the floor, knocking papers off his desk or work area, and running out of the classroom. These behaviors occurred at a rate of approximately two per minute throughout the day. At home, he exhibited regular aggression toward his infant sibling, but no aggression was observed at school. Student 1 exhibited stereotypic behavior including repetitively waving leaves and strings in front of his eyes. In addition, he frequently asked the teacher for permission to leave the room to go to the bathroom to escape classroom activities. In the bathroom, he repeatedly turned on the water to obtain an irritable screeching noise from the pipes, then put his ear next to it, or filled the sink with paper towels and water.

Student 2. Student 2 was 15 years old at the start of the study. He participated in both regular and special education pullout classes in the speech/language and resource room. Although Student 2 had difficulty engaging in social conversation, he could speak in full grammatically correct sentences to express his needs and desires, could read simple stories, and was able to write short sentences. Before Child 2 began participating in the study, the Vineland Adaptive Behavior Scales (Sparrow, Balla, & Cicchetti, 1984) were administered and his standard scores were as follows: 31 on the communication domain, <20 on the daily living skills domain, and a standard score of <20 on the socialization domain. In addition, he was a gifted musician and played in the school's jazz band.

The speech-language pathologist was targeting a number of pragmatically inappropriate behaviors for Student 2. These included his humming in a loud voice throughout classroom activities, making statements such as "I don't like this" in a loud voice during the lesson, leaving the classroom area without permission, and pretending to play his trumpet (with sound effects) during the lesson.

Setting

Data were collected for Students 1 and 2 in inclusive educational settings. Student 1's data were collected in an inclusive preschool setting during summer session with mostly typically developing children and in a regular education public school kindergarten classroom. Student 2's data were collected in a regular education high school classroom. Priming sessions for Student 1 were conducted in the evenings at home. Priming sessions for Student 2 took place during a free period in his schedule in a small high school room dedicated for pullout special education services.

In all sessions, the student's class teacher was present while a data collector(s) sat in the back corner of the classroom behind the student to observe behavior and academic responding. Classroom periods in which the student exhibited the most disruptive behavior were targeted for intervention. Data on academic responding for Student 1 in his preschool were collected during desk time while he worked on letter identification and letter writing. For Student 1's kindergarten class, disruptive behavior data were collected during activity time wherein specific activities were provided to the students. Data were not collected on academic responding for Student 1 in kindergarten because the activity, such as block building, was inversely related to appropriate behavior. Data for Student 2 were collected in his regular education writing class.

Intervention

Each student's priming program was developed and coordinated by the student's speech-language pathologist. Specifically, the speech-language pathologist used the manual, *Increasing Success in School Through Priming* (Wilde, Koegel, & Koegel, 1992), as a general guideline for implementing the priming intervention.

Intervention sessions occurred on a daily basis for each student. For Student 1, all sessions were implemented in the evenings by his parents. For Student 2, whose parents were unable to implement the priming sessions, a special education staff member worked with the student during daily "pullout" sessions. Task materials were picked up (from the researcher, as the teacher was blind to the conditions in this study) on a daily basis for each student by either the parent (for Student 1) or the special education staff member (for Student 2). Materials were returned to the researcher the following morning. During the priming sessions, the task to be presented in class the following day was targeted. During nonpriming sessions, in order to control for attention, an assignment was provided but it was not the assignment to be included in the next class day. Length of priming sessions was left up to the individual primer, but was reported to be approximately 1 hour per day. The teacher, the parent, and the special educator were all blind to the conditions and hypothesis of the study. Only the researchers who were conducting the experiment were aware of the experimental conditions and administered instructions to the parents and teachers in the experiment.

On a daily basis, the classroom teacher provided assignments that would be presented the following day to the researchers, and then either provided that assignment or a control assignment (equated for difficulty) to the person who would implement the priming sessions. For Student 1, tasks consisted of recognition, writing, and phonics for each letter of the alphabet in preschool and activities such as stacking blocks, stringing beads, and making patterns with small blocks in the kindergarten classroom. For Student 2, tasks consisted of grammar and writing activities in his English class, with specific writing assignments related to particular topics the teacher assigned. The primer was instructed to familiarize the student with the material in a relaxed, nondemanding manner. Primers were told not to worry if the student did not completely understand the material and not to punish the student during the sessions. Each day, before the start of school, the researcher collected the materials and asked the primer whether the materials had been reviewed.

Dependent Measures

Data were collected on two student behaviors—disruptive behavior and academic responding. Data were collected using a time sample procedure wherein the student was observed for 10 seconds and data were collected for 5 seconds. Data were collected for approximately 10 to 15 minutes during the academic period that was either primed or not primed. The following criteria were used to measure the two behavioral components:

- *Appropriate behavior:* Problem behaviors were individually defined for each subject in the participants' sections and data were collected on intervals with appropriate behavior (i.e., the absence of the problem behaviors). The data collectors were instructed to write a plus (+) if only appropriate behaviors occurred during a 10-second interval, and a minus (-) if any problem behaviors occurred during that interval. Based on these data, an overall percentage of appropriate behavior was calculated for each session.
- *Academic responding:* Data collectors were instructed to mark a plus (+) if the student exhibited only appropriate and correct academic responding during the 10-second interval, and a minus (-) if the student exhibited any inappropriate or incorrect academic responding. Appropriate academic responding was recorded as occurring when the student engaged correctly in the activity according to the teacher's instructions and within the range of classroom expectations. An overall percentage of appropriate academic responding was calculated for each session.

Reliability

Reliability measures were collected by observers who were naive to the experimental hypothesis of the study. To obtain a reliability percentage, agreements were divided by agreements plus disagreements (Barlow & Hersen, 1984).

Reliability data were collected on 16 sessions (8 for appropriate behavior and 8 for appropriate/correct responding). Interrater agreement for appropriate behavior was 90% (range 83% to 100%) and 81% for academic responding (range 81% to 88%).

RESULTS

Figure 1 shows the percentage of appropriate behavior and correct academic responding for Student 1. Percentages are shown for both students in sessions with and without priming. Results for Student 1 show that when priming sessions occurred, increases in academic responding were observed. In addition, reductions in problem behavior when priming occurred were noted. Specifically, the solid circles in Figure 1 represent the percentage of intervals with correct academic responding. The open squares in Figure 1 represent the percentage of intervals with appropriate behavior. Specifically, during classroom sessions with no priming, percentages of appropriate behavior for Student 1 were low, averaging 35% (range, 0%–61%). In contrast, in those sessions where priming occurred, appropriate behavior was substantially higher, averaging 83% (range 72%–100%). Correct academic responding averaged 30% (range, 50%–0%) in sessions with no priming. However, when priming occurred, correct academic responding was consistently higher, averaging 70% (range 60%–75%).

Sessions with priming for Student 2 produced similar results, as shown in Figure 2. As can be noted from the open squares, the percentage of appropriate behavior for Student 2 averaged 49% (range 28%–78%) in the absence of priming. Priming had a rapid and sustained effect on Student 2, immediately producing an increase in appropriate behavior, with an average of 95% (range 91%–100%) appropriate behavior. Similar to Student 1, during sessions when no priming occurred, appropriate behavior showed a decreasing trend across the sessions. In contrast, high levels of appropriate behavior occurred throughout the sessions when priming was implemented for Student 2. Data collected on the correct academic responding of Student 2 showed that in the absence of priming, a significant decrease in correct academic responding occurred, with a mean of 67%. However, when priming sessions were conducted, correct academic responding was significantly enhanced, averaging 98% across sessions (range 95% to 100%).

Effect Sizes

Effect sizes were calculated for each dependent variable for each student using the formula, effect size equals the mean of the no priming condition minus the mean of the priming condition, divided by the standard deviation of the no priming condition (Kromrey & Foster-Johnson, 1996). Accordingly, effect sizes were -2.5 for appropriate classroom behavior for Student 1; -3.3 for appropriate classroom behavior for Student 2; -1.95 for correct academic responding for Student 1; and -2.44 for correct academic

Figure 1. Percentage of appropriate behavior and appropriate/correct academic responding for Student 1 in preschool and kindergarten during sessions with priming (P) and those without priming (NP). Open squares represent behavior; closed circles represent academic responding. The break in the abscissa refers to the point where summer school ended.

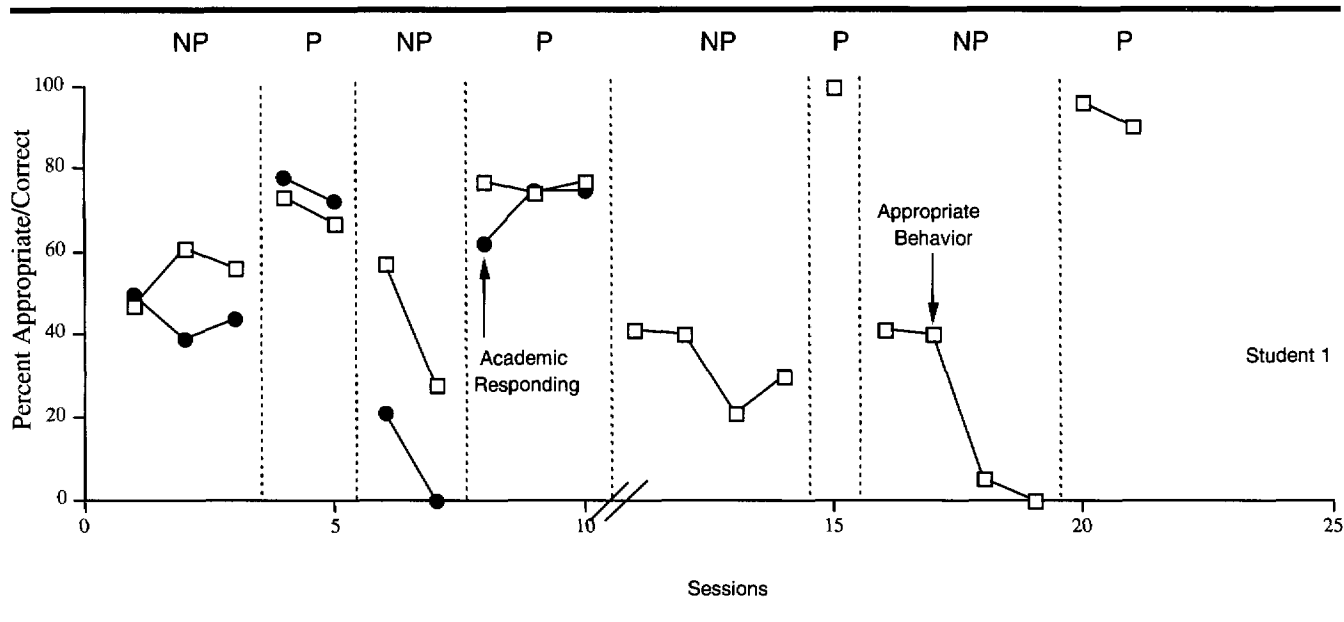
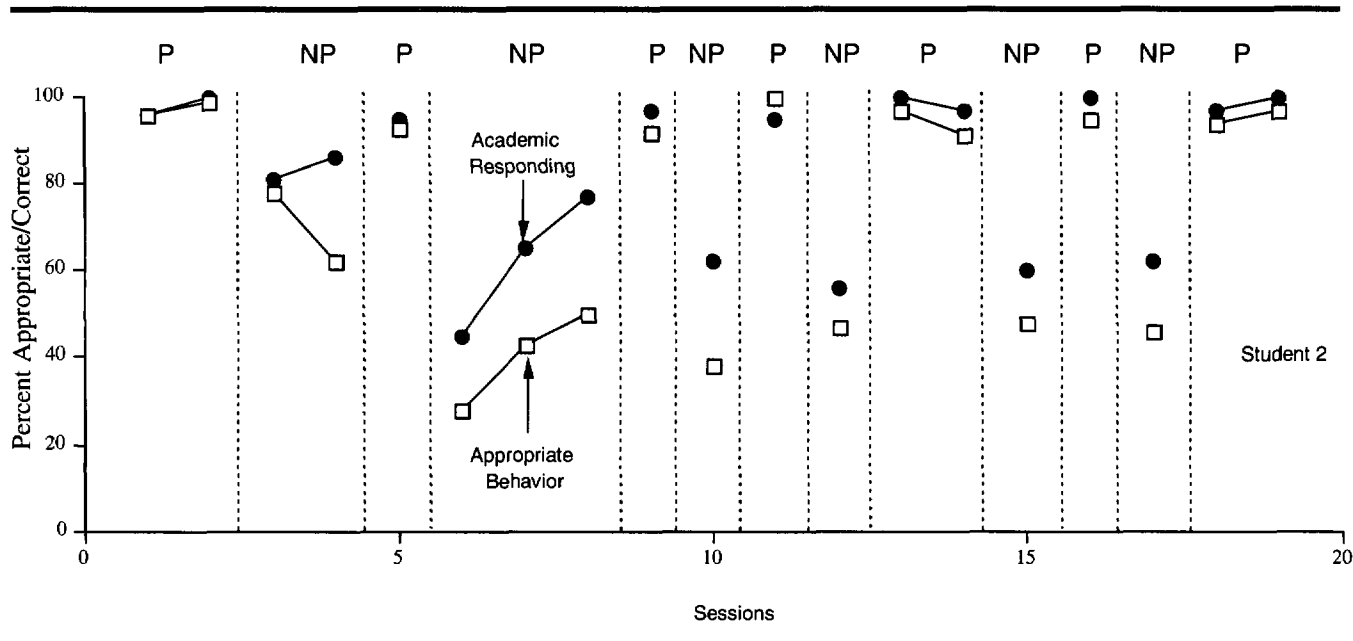


Figure 2. Percentage of appropriate behavior and appropriate/correct academic responding for Student 2 in high school during sessions with priming (P) and those without priming (NP). Open squares represent behavior; closed circles represent academic responding.



responding for Student 2. According to Cohen (1988, 1992), considering a large effect size to be of the order of magnitude of $-.8$, these effect sizes are all very large, suggesting that the influence of priming was practically significant.

CLINICAL IMPLICATIONS

The purpose of the present study was to investigate the effects of priming academic assignments on the occurrence

of problem behavior and level of academic responding in students with autism. The results indicate that the occurrence of problem behavior decreased and academic responding increased when priming preceded curricular activities, and these procedures can be easily coordinated by special educators. These results are consistent with previous research demonstrating the effectiveness of antecedent modifications in reducing problem behaviors (e.g., Dunlap et al., 1995; Dunlap et al., 1996; Lee et al., 1999; Moes, 1998).

The findings of this study expand the research in the use of antecedent techniques commonly discussed in curricular interventions. Previous research in this area has focused on techniques to heighten student interest in curricular activities (Dunlap et al., 1995), the integration of choice-making opportunities (Koegel, Dyer, & Bell, 1987; Moes, 1998), or modification of the level of difficulty associated with the task (Lee et al., 1999). In addition, priming has been used to improve the social functioning of students with autism in school settings (Zanolli, Daggett, & Adams, 1996). Modification of antecedents in previous studies proved to be effective at increasing on-task behavior and even strengthening academic performance. This study adds to the existing literature on antecedents showing that improvements in inclusive settings may also occur without the need for curricular revisions if priming is implemented.

A number of factors may have contributed to the success of the priming as they relate to problem behavior and increasing academic performance. As previously noted, priming consists of low-demand activities that include high potential for reinforcement. Therefore, the results of this study may be partially explained through an analysis of the reinforcement potential during priming. That is, previous reviews on problem behavior associated with academic assignments have identified the problem behavior to be linked with level of difficulty, time for completion, and inability to perform accurately on assignments (Sawyer, Nelson, Jayanthis, Bursuck, & Epstein, 1996). For students with autism or other related disabilities, high-demand tasks, particularly those involving complex language use, often lead to avoidance and escape-driven behavior. The priming sessions, which were low demand, may have resulted in enough acquisition to provide some reinforcement during the subsequent classroom lesson.

Second, the priming sessions included numerous sources of reinforcement. Research suggests that problem behavior is maintained by the negative reinforcement of escaping from aversive stimuli and through positive reinforcement in obtaining reinforcing stimuli (Lee et al., 1999). Therefore, priming with a low-demand version of the high-demand task will effectively reduce the need for escape-driven behavior. In addition, the high degree of reinforcement involved in priming sessions decreases the student's inclination to search for sources of reinforcement outside of the academic task. Consequently, on the basis of reinforcement properties, priming increases the probability that the student will engage in the same behavior (i.e., appropriate behavior) and demonstrate the same skills when similar performance is required at a later time (Hoover-Dempsey et

al., 2001). Priming, therefore, addresses both factors shown to maintain problem behavior.

The basis for the effect of priming on academic performance may be somewhat different. Recent studies have associated increased enjoyment in doing assignments with higher academic responding (Moes, 1998). Because priming involves high amounts of reinforcement, the student may associate enjoyment received from reinforcement with the academic assignment. An alternate explanation is based on evidence that students with learning disabilities demonstrate a lack of motivation concerned with academic task completion (Gajria & Salend, 1995). Again, because of sources of reinforcement, priming may provide the necessary motivation to complete the task. Furthermore, in completing the task, the student builds confidence specific to the task, enabling enhanced performance on similar tasks. This finding is supported by research showing that students with learning disabilities often feel that they do not have the ability to complete an academic assignment (Bryan, Burstein, & Bryan, 2001). Therefore, priming may be an effective way to heighten student confidence, thereby increasing ability to perform. Additionally, difficulty in allocating and maintaining attention, often a result of language disabilities, during academic tasks is another barrier to academic performance of individuals with learning disabilities (cf., Gajria & Salend, 1995). Priming sessions in the present study involved reinforcing those times when the student maintained attention to the task, and introduced the student to the complex language involved in the task during typical school instruction. Consequently, attention was maintained throughout the priming session, as well as throughout the activity sessions in class.

LIMITATIONS AND FUTURE RESEARCH

There are several limitations and potential areas for further research in the present study. For example, the priming sessions conducted in this study were not monitored. Monitoring of priming sessions may provide an indication of variables, such as level of reinforcement, acquisition of skills, or other variables that may have contributed to the success of the priming sessions. Additionally, a lack of attention on behalf of the parent may indicate a deficiency in the parent's involvement in the priming session. Interestingly, recent research has shown that parent involvement that includes positive parental attitudes may be related to the development of the student's positive attitude toward the assignment (Callahan et al., 1998; Hoover-Dempsey et al., 2001). Consequently, if, in the priming sessions, parents did not exhibit positive attitudes toward the academic tasks and did not attend to the reinforcement potential, the student may not have developed his or her own positive attitude. Without a positive attitude associated with the activity, escape-driven behavior may be more likely to occur. Additionally, the lack of positive attitudes for the student may adversely affect confidence levels and motivation specific to the academic

task. Therefore, studies should address the need to monitor the reinforcement and parent attitudes during priming sessions. Finally, in this study, the priming was implemented on a daily basis. It would be interesting to assess the effects of the priming when implemented less frequently, such as a biweekly basis.

Given the numerous behavioral difficulties observed in individuals with autism and those with other learning disabilities, effective strategies to reduce such problems are essential to enabling participation of individuals with disabilities in full inclusion classrooms. In this study, priming proved to be an effective antecedent-based intervention to promote more appropriate functioning of individuals with autism in classroom settings. This intervention technique may be ideal for speech-language pathologists to coordinate or implement, especially in light of the rapid improvements that resulted from the intervention. Appropriate behavior is vital to the progress of individuals with autism in school. Effective tools for increasing that behavior is critical if these students are to adapt to and benefit from full-inclusion educational settings. The technique demonstrated here is just one effective tool for modifying behavior and academic performance. Therefore, future research assessing the effects of integrating various antecedent techniques may be beneficial.

In summary, the present study further expands effective techniques for producing improvements in behavior and academic responding for students who are included in regular education classrooms. The procedure can easily be incorporated into the school curriculum and can be organized or implemented by special education school staff such as the speech-language pathologist. In addition, the positive effect of the intervention in reducing problem behaviors and increasing learning can be evidenced immediately, thereby creating more opportunities for the student to be successful in an inclusive school setting.

ACKNOWLEDGMENTS

Portions of the research reported in this article were supported by Research Grant MH28210 from the National Institute of Mental Health and by U.S. Department of Education Grant 5830-257-LO-B. The authors would like to thank Roberta Savage for her assistance with the data collection for this manuscript.

REFERENCES

- Barlow, D. H., & Hersen, M. (1984). *Single case experimental designs*. New York: Pergamon Press.
- Bryan, T., Burstein, K., & Bryan, J. (2001). Students with learning disabilities: Homework problems and promising practices. *Educational Psychologist, 36*, 167-180.
- Callahan, K., & Rademacher, J. A. (1999). Using self-management strategies to increase the on-task behavior of a student with autism. *Journal of Positive Behavior Interventions, 1*, 117-122.
- Callahan, K., Rademacher, J. A., & Hildreth, B. L. (1998). The effect of parent participation in strategies to improve the homework performance of students who are at risk. *Remedial and Special Education, 19*, 131-141.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.) Hillsdale, NJ: Erlbaum.
- Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159.
- Derby, K. M., Wacker, D. P., Sasso, G., Steege, M., Northup, J., Cigrand, K., et al. (1992). Brief functional assessment techniques to evaluate aberrant behavior in an outpatient setting: A summary of 79 cases. *Journal of Applied Behavior Analysis, 25*, 713-721.
- Dunlap, G., Foster-Johnson, L., Clarke, S., Kern, L., & Childs, K. E. (1995). Modifying activities to produce functional outcomes: Effects on the problem behaviors of students with disabilities. *Journal of the Association for Persons with Severe Handicaps, 20*, 248-258.
- Dunlap, G., & Kern, L. (1993). Assessment and intervention for children within the instructional curriculum. In J. Reichle & D. Wacker (Eds.), *Communication and language intervention series, Vol. 3. Communicative alternatives to challenging behavior: Integrating functional assessment and intervention strategies* (pp. 177-203). Baltimore: Paul H. Brookes.
- Dunlap, G., White, R., Vera, A., Wilson, D., & Panacek, L. (1996). The effects of multi-component, assessment-based curricular modifications on the classroom behavior of children with emotional and behavioral disorders. *Journal of Behavioral Education, 6*, 481-500.
- Dunn, L. M., & Dunn, L. M. (1981). *Peabody Picture Vocabulary Test-Revised*. Circle Pines, MN: American Guidance Services.
- Epstein, M. H., Munk, D. D., Bursuck, W. D., Polloway, E. A., & Jayanthi, M. (1999). Strategies for improving home-school communication about homework for students with disabilities. *Journal of Special Education, 33*, 166-176.
- Epstein, M. H., Polloway, E. A., Buck, G. H., Bursuck, W. D., Wissinger, L. M., Whitehouse, F., et al. (1997). Homework-related communication problems: Perspectives of general education teachers. *Learning Disabilities Research & Practice, 12*, 221-227.
- Gajria, M., & Salend, S. J. (1995). Homework practices of students with and without learning disabilities: A comparison. *Journal of Learning Disabilities, 28*, 291-296.
- Hoover-Dempsey, K. V., Battiato, A. C., Walker, J. M. T., Reed, R. P., DeJong, J. M., & Jones, K. P. (2001). Parental involvement in homework. *Educational Psychologist, 36*, 195-209.
- Iwata, B. A., Pace, G. M., Dorsey, M. F., Zarcone, J. R., Vollmer, T. R., Smith, R. G., et al. (1994). The functions of self-injurious behavior: An experimental-epidemiological analysis. *Journal of Applied Behavior Analysis, 27*, 215-240.
- Kaufman, A. S., & Kaufman, N. L. (1983). *Kaufman Assessment Battery for Children*. Circle Pines, MN: American Guidance Services.
- Koegel, L. K., Koegel, R. L., & Dunlap, G. (Eds.). (1996). *Positive behavioral support: Including people with difficult behavior in the community*. Baltimore: Paul H. Brookes.
- Koegel, R. L., Dyer, K., & Bell, L. (1987). The influence of child-preferred activities on autistic children's social behavior. *Journal of Applied Behavior Analysis, 20*, 243-252.
- Koegel, R. L., & Koegel, L. K. (Eds.). (1995). *Teaching children with autism: Strategies for initiating positive interactions and*

- improving learning opportunities*. Baltimore: Paul H. Brookes.
- Koegel, R. L., Koegel, L. K., & Surratt, A. V.** (1992). Language intervention and disruptive behavior in preschool children with autism. *Journal of Autism and Developmental Disorders*, 22, 141-153.
- Kromrey, J. D., & Foster-Johnson, L.** (1996). Determining the efficacy of intervention: The use of effect sizes for data analysis in single-subject research. *The Journal of Experimental Education*, 65(1), 73-93.
- Learning Accomplishment Profile.** (1992). (Chapel Hill Training-Outreach Project, Inc.). Chapel Hill: Kaplan Early Learning Company.
- Lee, Y., Sugai, G., & Horner, R. H.** (1999). Using an instructional intervention to reduce problem and off-task behaviors. *Journal of Positive Behavior Interventions*, 1, 195-204.
- Leiter, R. G., & Arthur, G. A.** (1982). *Leiter International Performance Scale*. Los Angeles: Western Psychological Services.
- Luiselli, J. K., & Cameron, M. J.** (Eds.). (1998). *Antecedent control: Innovative approaches to behavioral support*. Baltimore: Paul H. Brookes.
- Moes, D. R.** (1998). Integrating choice-making opportunities within teacher-assigned academic tasks to facilitate the performance of children with autism. *Journal of the Association for Persons with Severe Handicaps*, 23, 319-328.
- Salend, S. J., & Gajria, M.** (1995). Increasing the homework completion rates of students with mild disabilities. *Remedial and Special Education*, 16, 271-278.
- Sawyer, V., Nelson, J. S., Jayanthi, M., Bursuck, W. D., & Epstein, M. H.** (1996). Views of students with learning disabilities of their homework in general education classes: Student interviews. *Learning Disability Quarterly*, 19, 70-85.
- Sparrow, S. S., Balla, D. A., & Cicchetti, D. V.** (1984). *Vineland Adaptive Behavior Scales*. Circle Pines, MN: American Guidance Services.
- Wilde, L. D., Koegel, L. K., & Koegel, R. L.** (1992). *Increasing success in school through priming: A training manual*. University of California, Santa Barbara.
- Zanolli, K., Daggett, J., & Adams, T.** (1996). Teaching preschool-age autistic children to make spontaneous initiations to peers using priming. *Journal of Autism and Developmental Disorders*, 26, 407-422.

Received May 19, 2002

Accepted March 26, 2003

DOI:10.1044/0161-1461(2003/019)

Contact author: Lynn Kern Koegel, PhD, Clinical Director, Autism Research and Training Center, C/C/S Psychology Program, University of California, Santa Barbara, Santa Barbara, CA 93106-9490. E-mail: koegel@education.ucsb.edu

A vertical bar on the left side of the page, consisting of a series of horizontal segments in shades of yellow and orange, with a small red diamond at the top.

COPYRIGHT INFORMATION

TITLE: Priming as a Method of Coordinating Educational Services for Students With Autism

SOURCE: Lang Speech Hear Serv Sch 34 no3 JI 2003

WN: 0318201952006

(C) The American-Speech-Language-Hearing Association is the publisher of this article and holder of the copyright. Further reproduction of this article in violation of copyright is prohibited without the consent of the publisher. To contact the publisher: <http://www.asha.org/>

Copyright 1982-2004 The H.W. Wilson Company. All rights reserved.