Effects of Corrective Reading on the Reading Abilities and Classroom Behaviors of Middle School Students With Reading Deficits and Challenging Behavior

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Failure to be successful both academically and socially in school is characteristic for students with emotional and behavioral disorders (EBD), challenging behaviors, and learning difficulties (LD) (Foley & Epstein, 1992; Vaughn, Zaragoza, Hogan, & Walker, 1993). These students are far more likely to be deficient in basic academic skills than are their peers without disabilities. In fact, the academic difficulties faced by students with EBD and LD often result in school failure (Kauffman, 1997; Walker, Colvin, & Ramsey, 1995). For example, estimates of the prevalence of academic difficulties, especially reading and arithmetic deficits, of students with EBD range from 33% to 81% (Ruhl & Berlinghoff, 1992). It is clear that most students with challenging behaviors also have some type of academic difficulty as well.

Students with EBD, challenging behaviors, and learning difficulties often are excluded from instruction because of behaviors such as noncompliance, aggression, disruption, self-injury, and antisocial responses (Knitzer, Steinberg, & Fleisch, 1990; U.S. Department of Education, 1998). Behaviors that are considered violent, unsafe, and disruptive to classroom teachers, school administrators, and other school personnel are the outcome of a predictable chain of events that begin with academic failure (Scott, Nelson, & Liaupsin, 2001). Some researchers have suggested that efforts to prevent behavior problems should include promoting effective academic instruction for those students who exhibit challenging behaviors (Carr, Taylor, & Robinson, 1991; Maguin & Loeber, 1996). Evidence supports early identification and intervention related to academic learning problems, which reduces the likelihood that students will engage in disruptive classroom behavior in the future (Maguin & Loeber). The link between poor academic achievement and types of behavior that threaten school safety, however, largely has been ignored.

Maguin and Loeber's (1996) meta-analysis on the academic and behavior connection identified three strong relationships between academic failure and challenging behavior or delinquency. First, poor academic performance is related to the onset, frequency, persistence, and seriousness of delinquent offending, whereas higher academic performance is associated with refraining or desisting from offending. Second, cognitive deficits and attention problems are associated with poor

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academic performance and delinquency. Third, interventions that improve academic performance are associated with a reduction in the prevalence of delinquency. These findings support the link between academic achievement and social behaviors.

In schools, students with challenging behaviors and learning difficulties are typically less academically proficient than their peers for several reasons. First, students identified as having challenging behaviors or academic deficits in the classroom are more likely to experience negative or punitive interactions with their teachers, regardless of their behavior (Denny, Epstein, & Rose, 1992; Gunter, Jack, DePaepe, Reed, & Harrison, 1994). Second, students with challenging behaviors and learning difficulties also receive less academic engaged time with their teachers than students without challenging behaviors (Johns, 2000). Finally, teachers' instruction is more limited and characterized by easier tasks for students exhibiting behavior problems and learning difficulties than for students who do not exhibit such behaviors (Carr et al., 1991).

The interactions between teachers and students in the classroom contribute to the poor academic performance of students already experiencing academic and social problems. Gunter, Denny, Jack, Shores, & Nelson (1993) described a cycle of negative reinforcement to illustrate the teacher-student instructional interactions in classrooms for students with EBD and similar challenging behaviors. Gunter and colleagues defined

					[1]	IQ[2]	Score[3]	Assessment[4]	Problems[5]
Evan	13.5/Male	7th	Hispanic	Yes	LD	84	2.1	206	10
John	13.10/Male	7th	African-Amer.	No	OHI	99	4.9	268	8, 9
Bill	14.2/Male	7th	African-Amer.	Yes	OHI	85	2.7	336	9
David	12.10/Male	7th	African-Amer.	No	EBD	73	2.4	390	9
Tammy	12.1/Female	6th	African-Amer.	Yes	OHI	81	3.0	435	10
Anthony	11.6/Male	6th	African-Amer.	Yes	OHI	86	4.0	426	9, 10
Will	12.5/Male	6th	African-Amer.	Yes	EBD	87	1.9	BR[6]	8, 9, 10

[1]LD, learning disability; OHI, other health impairment; EBD, emotional and behavioral disorder.
[2]Weschler Intelligence Scale for Children-III (WISC-III) Full-scale IQ Score.
[3]Woodcock Reading Mastery Test-Revised Normative Update (Woodcock, 2000) Basic Skills Cluster Score.
[4]Scholastic Reading Inventory (Scholastic Inc., 2000).
[5]8, aggression; 9, noncompliance; 10, disruptive.
[6]Beginning reader.

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randomly selected from the list to serve as the comparison student during specific behavioral observations.

Two special education teachers participated in the study by implementing the intervention in the resource classrooms. Both held state certifi

condition, each participant was presented with a reading passage on his/her instructional level (as determined by the placement data and from the [illegible] program) and instructed to read the passage orally. Participants were given a consistent, scripted set of directions from the teacher (i.e., "I am going to give you a passage to read, and I am going to time you for one minute to see how many words you read. Please read quickly, but not so fast that you make mistakes. Begin.")

[illegible] Intervention data were collected on the same measures as during the baseline condition. Each intervention session began with the teacher implementing a [illegible] lesson. A typical lesson included the following: a) participants in the intervention phase received instruction in the appropriate lesson; b) each lesson typically began with instruction on word attack skills, followed by word reading, story reading, individual reading, teacher-directed workbook exercises, and independent workbook exercises; and c) at the end of the lesson, the participant was given a [illegible] passage to read within 1 minute and the teacher used the same scripted directions for the reading passages as in the baseline condition. If the participant met the fluency criterion as stated in the [illegible] program, then the participant advanced to the next lesson and reading probe. If the participant did not meet the fluency criterion, the same lesson was repeated, and then a different but comparable reading passage was administered. At the conclusion of each reading probe, the teacher provided feedback to the participant (e.g., "You did a great job today. You read 80 words correctly with 2 errors in one minute."). Once the first participant achieved the [illegible] program fluency criterion, then the participant in the second tier began the intervention. Once the second participant achieved criterion, then the third participant began the intervention, and so on.

[illegible] During baseline and intervention conditions, participants were provided with grade-level passages from the general education curriculum to read aloud after every third session. The participants received the same set of directions for these reading

behaviors divided by the number of planned teacher behaviors and the result multiplied by 100. For the participants, reliability was assessed for 24% of the sessions for Will, 27% for Tammy and John, 29% for Evan, 30% for Anthony and Bill, and 37% for David. Average agreement for procedural reliability was 96% (range, 85 to 100%) for Tammy, 97% (range, 83 to 100%) for Evan, and 100% for Anthony, Will, John, Bill, and David. The same persons measured interobserver reliability for the reading probes, which was calculated using the following formula: number of correct words and error agreements divided by the number of agreements plus the number of disagreements and the sum multiplied by 100. Reliability was assessed for 30% of the sessions for Bill, 35% for Tammy, 36% for David, 40% for John, 41% for Will, 42% for Evan, and 45% for Anthony. Average agreement for interobserver reliability was 98.8% (range, 94 to 100%) for Anthony, 99.3% (range, 97 to 100%) for Evan, 99.9% (range, 99 to 100%) for Tammy, and 100% for Will, John, Bill, and David. The same persons measured interobserver reliability for the direct observations, and the point-by-point formula was used to calculate this reliability (Tawney et al., 1984). Reliability was assessed for 21% of the sessions for Tammy, 27% for David, 28% for Anthony, 33% for Will and Evan, 36% for Bill, and 38% for John. Average agreement was 93% (range, 90 to 100%) for Evan, 95% (range, 90 to 100%) for Anthony, Will, and David, 96% (range, 93 to 100%) for John, 96% (range, 90 to 100%) for Bill, and 97% (range, 90 to 100%) for Tammy.

Social Validity

The participants and teachers completed a social validity survey at the conclusion of the study. The participant and teacher versions each had 12 questions, 9 with a 3-point Likert scale and a prompt for additional comments and 3 open-ended questions. For the participant version, we used the Frye readability formula to ensure that the participants could read the questions. In addition, participant responses were tape recorded to avoid writing difficulties. On the teacher version, we also asked for their opinions concerning the training each received on how to implement the program.

Reliability

Procedural and interobserver reliability was coded for at least 20% of the sessions. The first author and trained staff measured procedural reliability, which was calculated using the following formula (Billinglsey, White, & Munson, 1980): number of teacher

Results

We summarize the effects of the [illegible] program separately for each participant in relation to their reading fluency behavior and then in relation to their social behavior, and discuss the social validity of the program.

The effectiveness of the [illegible] program on participant oral reading fluency is illustrated in [illegible] (classroom 1) and [illegible] (classroom 2) and described in [illegible] (classrooms 1 and 2). Oral fluency generalization for participants is illustrated in [illegible] (classroom 1) and [illegible] (classroom 2) and described [illegible] gives pre- and posttest reading achievement data (standard scores and grade equivalencies). A one-tailed t test revealed a significant difference between the pretest scores (= 74.4286, = 10.75)

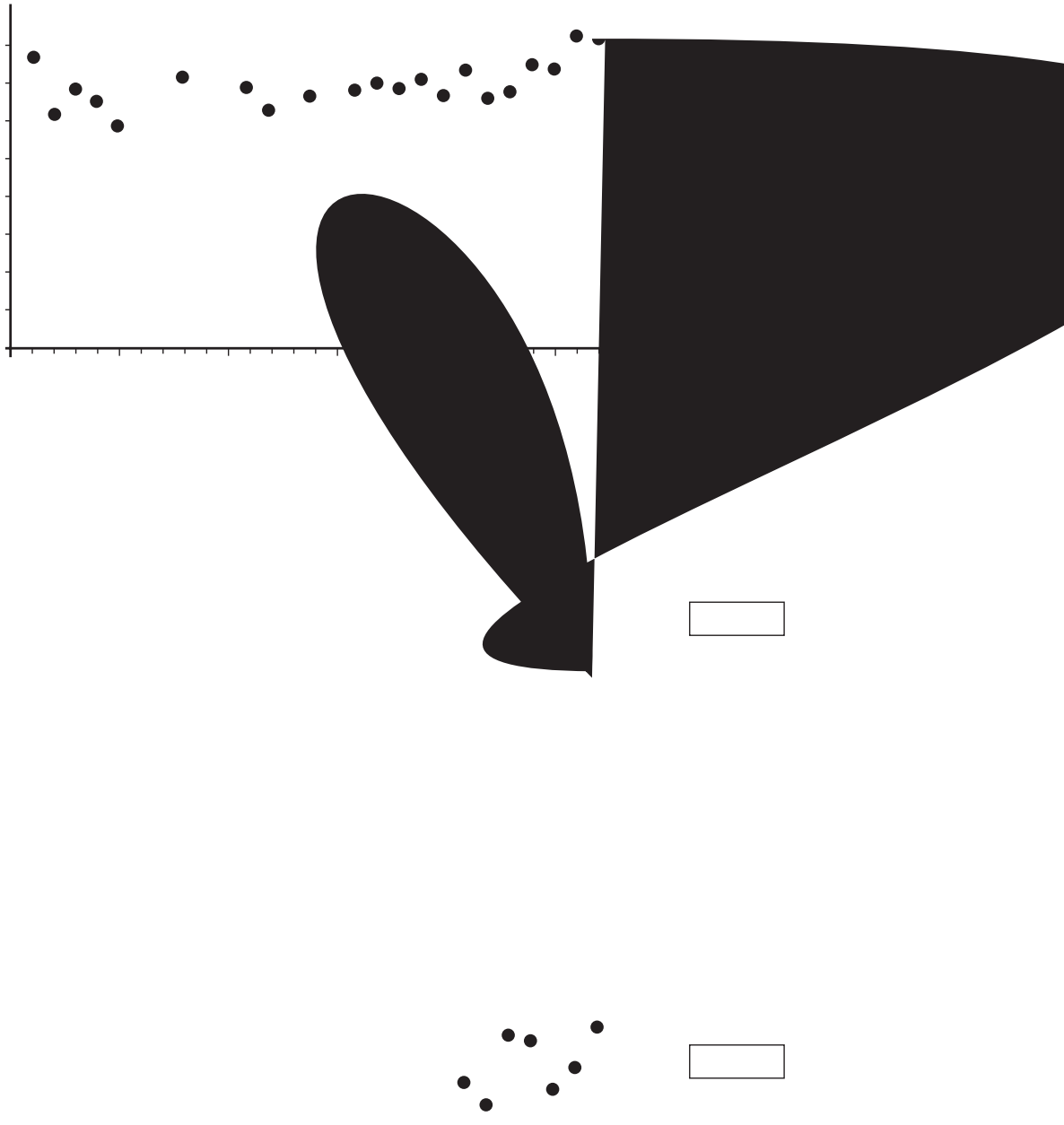

Figure 2. Classroom 2: Oral reading fluency on within program passages with criteria.[1,2,3]

Figure 3. Classroom 1: Oral reading fl

Student	Standard Scores			Grade Equivalents			Number of CR Lessons Completed
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	
Evan	65	74	+9	2.3	3.0	+0.7	12
John	84	87	+3	4.7	5.3	+0.6	12
Bill	68	73	+5	2.7	3.3	+0.6	7
David	71	75	+4	2.6	3.2	+2.6	6
Tammy	80	87	+7	3.0	4.2	+1.2	20
Anthony	91	89	-2	4.4	4.2	-0.2	14
Will	62	73	+11	1.8	2.8	+1.0	11

and posttest scores (= 79.7143, = 7.49). The obtained $t(6)$ value of 3.2745 was greater than the critical $t(6)$ of 3.143 for $\alpha^1 < .01$, suggesting that the program may have contributed to the improved reading abilities of the participants.

Evan made reading fluency gains on each passage presented during intervention and completed 11 lessons (21 intervention sessions). During baseline for passages, his reading rate ranged from 76 correct words per minute (cwpm) with 10 errors to 90 cwpm with 7 errors. His reading rate during intervention for passages ranged from 58 cwpm with 6 errors to 117 cwpm with 0 errors. During baseline for generalization passages, Evan's reading rate ranged from 35 cwpm with 12 errors to 45 cwpm with 16 errors. His reading rate during intervention for generalization passag1r5v TJ /F2 1 Tf 8.3368 0 TD 0 Tc 0.1958 Tw [(passages r)12(anged from 92)]TJ

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intervention sessions). During baseline for [illegible] passages, his reading rate ranged from 94 cwpm with 8 errors to 101 cwpm with 7 errors. His reading rate during intervention for [illegible] passages ranged from 103 cwpm with 2 errors to 126 cwpm with 2 errors. During baseline for generalization passages, Bill's reading rate ranged from 60 cwpm with 16 errors to 86 cwpm with 14 errors. His reading rate during intervention for generalization passages ranged from 93 cwpm with 5 errors to 94 cwpm with 4 errors. Both Bill's standard and grade equivalent scores increased on the posttest WRMT-R.

. David made moderate reading fluency gains on each passage presented during intervention and completed five lessons (five intervention sessions). During baseline for [illegible] passages, his reading rate ranged from 85 cwpm with 7 errors to 99 cwpm with 4 errors. His reading rate during intervention for [illegible] passages ranged from 90 cwpm with 3 errors to 106 cwpm with 2 errors. During baseline for generalization passages, David's reading rate ranged from 36 cwpm with 12 errors to 42 cwpm with 14 errors. His reading rate during intervention for generalization passages ranged from 41 cwpm with 15 errors to 60 cwpm with 5 errors. Both David's standard and grade equivalent scores increased on the posttest WRMT-R.

. Tammy made minimal reading fluency gains on each passage presented during intervention and completed 19 lessons (19 intervention lessons). During baseline for [illegible] passages, her reading rate ranged from 98 cwpm with 7 errors to 133 cwpm with 5 errors. Her reading rate during intervention for [illegible] passages ranged from 98 cwpm with 1 error to 144 cwpm with 3 errors. During baseline for generalization passages, Tammy's reading rate ranged from 50 cwpm with 21 errors to 86 cwpm with 12 errors. Her reading rate during intervention for generalization passages ranged from 71 cwpm with 16 errors to 103 cwpm with 12 errors. Both Tammy's standard and grade equivalent scores increased on the posttest WRMT-R.

[illegible]. Anthony made reading fluency gains on each passage presented during intervention and completed 13 lessons (13

63 cwpm with 6 errors. His reading rate during intervention for generalization passages ranged from 58 cwpm with 9 errors to 79 cwpm with 3 errors. Both Anthony's standard and grade equivalent scores decreased on the posttest WRMT-R.

. Will made reading fluency gains on each passage presented during intervention and completed 11 lessons (13 intervention sessions). He placed at a lower instructional level than

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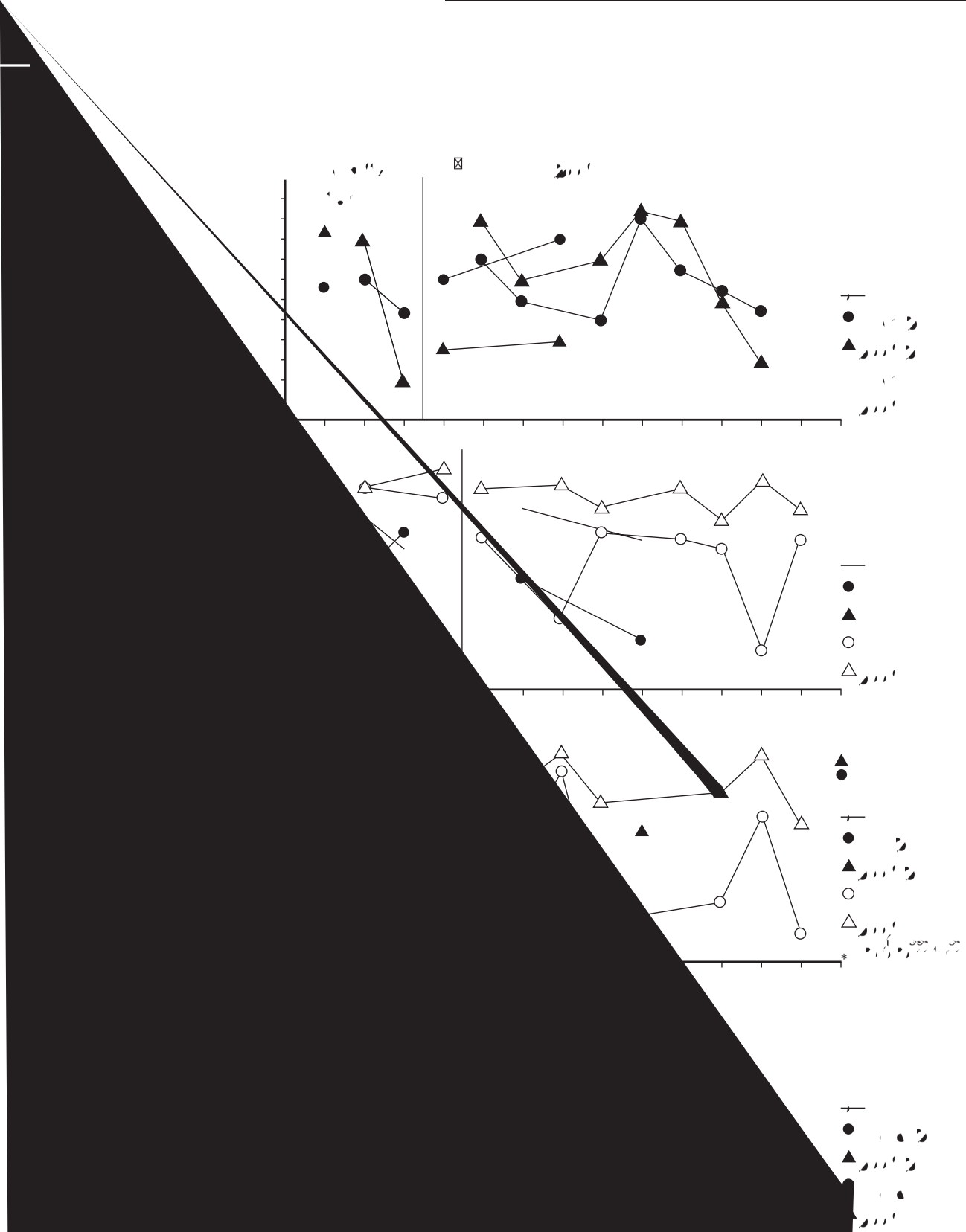

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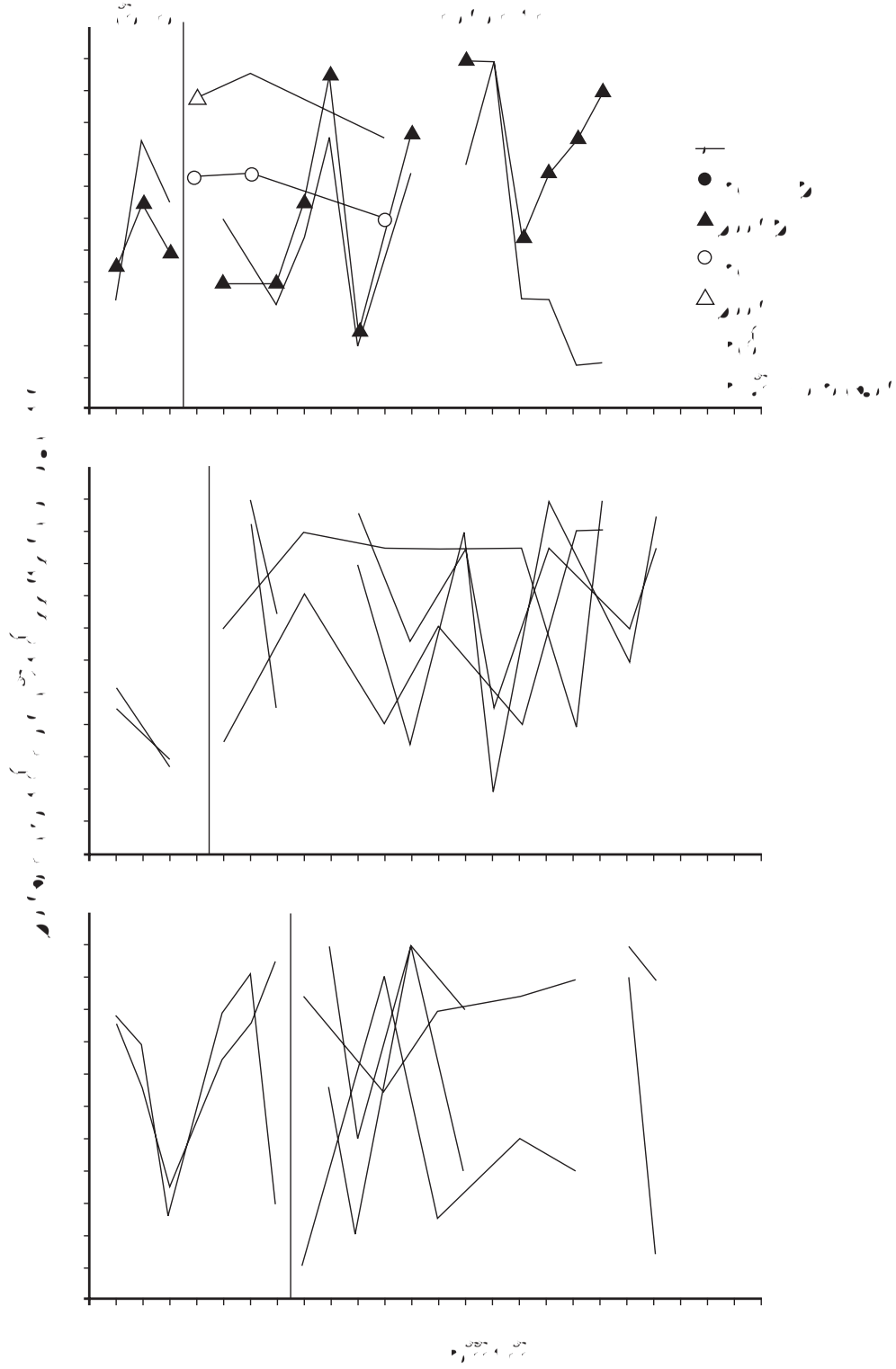

Figure 6. Classroom 2: Appropriate student behaviors in special and general education classrooms.[1,2]

the [illegible] program improved the reading abilities of their students, that they would continue to implement the program, and that they felt prepared to implement the program.

Participant Reading Performance

We had several positive findings related to participant reading performance. First, all participants' cwpm intervention means exceeded the cwpm baseline means. Five participants demonstrated these gains during the first [illegible] passage read during the intervention condition. Anthony had the highest gain in mean cwpm, from baseline (73.6) to intervexample, Evan had the highest gain across conditions with a mean 39 cwpm in baseline to 68.4 cwpm in intervention and David had the lowest gain across conditions with a mean of 38.7 cwpm in baseline to 53 cwpm in the intervention.

Third, six of the seven participants' overall reading ability increased as indicated on the Woodcock Johnson Reading Mastery Test. Statistically significant pretest to posttest gains were observed for the combined group. For example, David increased from a grade equivalency of 2.6 to 3.2 after 6 [illegible] lessons, and Will increased from a 1.8 to a 2.8 after 11 lessons. Most of the students made grade equivalency gains over a short period of time when completing a limited number of lessons, which also was found in the Malmgren and Leone (2000) study.

Fourth, five of the seven students met reading criteria to move to the next [illegible] lesson, with a single intervention

Participant Behavior Performance

The results of this study did not establish a relationship between improved oral reading fluency and a reduction of inappropriate behavior for the participants. None of the participants demonstrated improvement in their social behavior during the intervention condition when engaged in reading activities outside the [illegible] sessions. The variability in the participants' social

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