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Training Mothers of Disruptive Nonreaders in Remedial Skills: A Home Tutoring Program[1]

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Abstract

A tutoring program was developed which applies reinforcement principles to the teaching of reading, utilizes linguistically controlled programmed reading material, and is easily administered by parents. Three mothers of disruptive children with reading deficits were trained to use the tutoring program in three to 20 hours of direct supervision. The data from this initial evaluation suggest that (1) parents can be trained to effectively tutor their own disruptive child at home, (2) significant increases in reading skills can interact with contingency management programs in the classroom to reduce otherwise intractible disruptive behavior in a nonreader, and (3) parents of children who perceive their child's reading deficit as severe and bearing on school placement are most likely to maintain the daily home tutoring. A cost-effectiveness comparison is made between the home tutoring program and traditional and innovative remedial tutoring programs. The literature relating reading deficits, classroom behavior and delinquency is briefly reviewed. Further study of the trends noted in this investigation and improvements in the tutoring procedures are recommended.

Introduction

Surveys of reading achievement among juvenile delinquents have reported a much higher incidence of reading deficits than surveys among regular secondary school pupils. Estimates of the number of delinquent offenders two or more years retarded in reading skills range from 60% to 90% (Critchley, 1968; Margolin, Roman, & Harari, 1955; Rice, 1968). Estimates of similar degrees of reading retardation in unselected school populations range from 10% to 50% in the United States (Allen, 1969; Douglass, 1969) and from 30% to 40% in Britain (Critchley, 1968).

These surveys lead one to expect a relationship between reading achievement and predelinquent, disruptive behavior at the elementary as well as the secondary level. Studies employing both teachers' ratings of classroom

behavior (Graubard, 1971; McCarthy & Paraskevopoulos, 1969) and systematic observations of classroom behavior by unbiased observers (Cobb, 1971; Lahaderne, 1968) demonstrated such a relationship for a variety of special and regular class populations at the elementary level. Furthermore, this relationship appears to persist when IQ is held constant (Feldhusen, Thurston, & Benning, 1970; Lahaderne, 1968) and from elementary to secondary school (Feldhusen et al., 1970). However, one study using teachers' ratings of classroom behavior (Swift & Spivak, 1969) indicated a correlation with school grades but not with tested achievement.

While the evidence suggests that delinquent youth are often deficient in reading skills and somewhat less clearly that the pupil with a reading deficit is disruptive, it has been the experience of the author that the disruptive nonreader is often the last to receive remedial services in the public schools. Since the incidence of children with reading deficits is generally high in the United States, averaging about 25% of the public school population (Allen, 1969; Douglass, 1969), the demand for remedial services often presents a selection problem. Who should receive remedial help: the conforming nonreader? the withdrawn nonreader? the disruptive nonreader? In view of the limited number of reading specialists available, remedial services are allocated to those pupils who are easy to manage and appear to have a better prognosis rather than to pupils with behavior problems.

One solution to the manpower problem in the area of remedial services for nonreaders in general, and disruptive nonreaders in particular, is to train the parents of the nonreaders to tutor their own child at home. Ryback and Staats (1970) report considerable success in training the parents of unselected remedial cases to tutor their child at home. The study below describes the initial results of a program developed as part of the Social Learning Project at the Oregon Research Institute to train the parents of disruptive nonreaders in remedial skills. The home tutoring program and parent training procedures outlined in this paper are an attempt to develop a remedial reading program which is (a) simple enough for parents to administer, (b) employs contingencies of reinforcement "natural" to the tutoring situation to control disruptive behavior, and (c) utilizes linguistically programmed reading material as advocated by Chall (1968).

The Social Learning Project is a federally funded research project to develop and evaluate behavioral approaches to the treatment of conduct problems in predelinquent boys (Patterson, Cobb, & Ray, 1973). About half of the project's referrals come from schools. Of those referrals, where reading test results were available, 40% had reading deficits in addition to high rates of disruptive behavior in the classroom. While teachers can be trained in contingency management procedures to bring the disruptive behavior under control, it was assumed that the effects of such treatment

would generalize to teachers untrained in contingency management procedures if reading skills were acquired as part of the treatment program. When the schools could not be persuaded to take several disruptive nonreaders into their remedial programs, the staff of the Social Learning Project asked the parents of these boys if they would be willing to participate in an experimental program to train them to tutor their own child at home. If the parents of these boys could be trained to effectively treat their behavior problems at home, why could they not also be trained to remediate their reading deficits? Additional questions occurred as the development of a home tutoring program evolved. Which parents would be most likely to maintain a daily tutoring program requiring 45 minutes per day? How effective would such a home tutoring program be relative to traditional (Balow, 1965) and innovative (Bateman, 1971; Bloom, 1971) remedial reading programs? Would significant improvement in reading skills in a referred, disruptive nonreader interact with the training of the teacher in contingency management procedures to produce better control of disruptive behavior in the classroom? This paper describes the program developed to train the parents of referred, disruptive nonreaders in remedial skills and the initial results obtained. While the data are preliminary, trends are present suggesting answers to the above questions.

Method

Subjects and Mothers

The subjects in this study were selected from the population of elementary school age boys (and their siblings) referred to the Social Learning Project for treatment of disruptive behavior in the home and school classroom. Selection from this population was on the basis of a noticeable discrepancy between reading level and grade placement in school.

Two of the subjects were originally referred by the school for treatment of disruptive classroom behavior. One (John B.) was the sibling of a referred boy. All three boys tested within the normal range of intelligence and were from one-and-one-half to four-and-one-half years retarded in reading. They would appear to qualify as "learning disability" cases by most criteria in current use in the public schools.

Steve K.[3] Steve was nine years old and was repeating third grade when the Social Learning Project staff began a school intervention program. At the time of referral he manifested severe behavior problems, had virtually no reading or spelling skills, and was in danger of school exclusion. He had already been excluded from one elementary school and the parents had moved to a new community to permit school enrollment. He was emitting deviant classroom behaviors such as hitting, non-attending, out of seat,

and inappropriate talk at over twice the rate of his classmates. The specific behavior that concerned the school most was his fighting with his classmates at the rate of one classmate every two hours. A behavior modification program managed by the teacher under Project supervision only temporarily controlled Steve's deviant behavior. The program consisted of a token system for appropriate social and academic behaviors and time-out for disruptive behaviors. When the contingencies were relaxed by the teacher, Steve's deviant behavior returned to its previous out-of-control rates (see Fig. 1, on 10-13/10-14).

Pre-test results indicated that Steve was reading at the 1.4 grade level, was 2.6 years behind expected reading level, could spell only one word on the WRAT, knew only 13 of the 26 letter sounds, and consistently reversed and transposed letters within words. At times he seemed to confuse the right and left sides of the page and occasionally lost his place. His reading deficit would be regarded as severe. The school required little or no reading of Steve because of his obvious lack of academic skills. The teacher tried to keep him occupied by having him copy passages from Hot Rod magazines or dictate stories to the teacher aide. The remedial reading teacher refused to work with him as she was assigned to his school only half-time and said that Steve required a full-time remedial teacher. Steve's mother was a 31-year-old housewife with five children, a husband, and a brother living in the home. She had completed 11 years of education and had a 12.6 grade reading level on the Wide Range Achievement Test.

John B. John was 12 years old, was in the fifth grade, and had failed two grades in school at the time tutoring was begun. He was the sibling of a referral to the Social Learning Project. His major problem was clearly his poor school achievement, although there were high rates of deviant behavior among his siblings and he had occasionally been reported for behavior problems in school. John was reading at the 2.4 grade level, was 4.3 years below expected reading level, was very embarrassed about his inability to spell, and was reluctant to accept the offer of a double social promotion to seventh grade, so he could attend the same school as his twin brother. His reading deficit was a moderate one. It was clear to Project staff, and to John's parents, that a significant improvement in John's reading and spelling skills would be required to facilitate such a promotion. John's mother was a 35-year-old housewife with six children (including a newly arrived infant) and a husband living in the home. She was reading at the 16.5 grade level on the Wide Range Achievement Test and was a high school graduate with one year of college.

Billy F. Billy was eight years old, in the third grade, and suspended from school half-days when referred for treatment of behavior problems in the classroom. A school intervention program was begun to control deviant behavior in the home and school classroom and effected removal of the half-day suspension. Billy resumed full day attendance shortly after school

intervention began. Billy was reading at the 1.7 grade level and was 1.6 years retarded in reading. Billy's mother was a 29-year-old housewife with three children and a husband living at home. She was reading at the grade level on the Wide Range Achievement Test and had completed 12 years of education.

Materials

The tutoring program consisted of four specific procedures requiring about 45 minutes of the mother's time during each tutoring session. The program was built around a linguistically controlled series of programmed reading texts appropriate for remedial use (Sullivan, 1968). Such commercially prepared materials are readily available and minimize the preparation of special materials and training of the mothers. The mothers were provided with the appropriate programmed texts (Sullivan, 1968), the accompanying teacher's manual which included the sounds to be introduced on each page of the text, two spiral notebooks in which to record data and the child's spelling words, and a pack of blank cards for recording the sound-letter combinations. In cases where disruptive behavior was severe, the mother was provided with a 30-minute stop watch which could be used to record "work time."

Training the Mothers

The mothers were shown how to copy the sound-letter combinations from the teacher's manual onto the blank cards in good elementary school manuscript and to order the cards as the sounds were introduced in the text (viz., p, i, n, a, t, m, c, h, s, f, x, o, b, g, e, d, r, l, u, j, w, -nt, -nd, -ay, sp, st, fl, fr, dr, tr, cr, th, k, sh, etc.). It was explained that blends (e.g., sp, st, fl, etc.) need not be included on the cards, but all digraphs (sh, th, wh, ch, etc.) and dipthongs (ou, oa, ow, ea, etc.) must be included. One of the spiral notebooks was labeled "Mom's Daily Reading Record" and the other "Billy's Spelling Notebook."

The mother was given the following instructions and told to follow them in the prescribed order for each tutoring session.

1. Take a one-minute time sample of the child's oral reading rate (Starlin, 1971) from the previous day's lesson in the programmed text. That is, have the child begin reading orally when you say "begin" and continue reading down the page until you call "stop" at one minute. Keep a tally of all errors made. By the day's date in the "Daily Reading Record" record

the number of correct words read per minute, i.e., the child's oral reading rate. Graph the child's oral reading rate daily and set a reasonable goal for the child each week or month. Do not be satisfied with the child's reading rate until it has reached a minimum of 60 words per minute, as he is not likely to comprehend what he's reading if he reads much slower than that (Haughton, 1970).

2. Take five minutes to flash through the cards containing the sounds to be included in the day's lesson, toegether with any sounds from the previous lesson that the child cannot recall upon presentation of the card. The child should be able to call out from visual presentation and to write from dictation "automatically." The flash cards can also be used to practice blending of sounds as suggested by Orton (1964).

3. Take 30 minutes for the child to work in the programmed text, making sure the answers are covered before beginning each page. When he has completed each page, have the child correct the page. Monitor him intermittently to ensure accuracy in correcting pages and praise him for correct responses. At the end of each page, record in the "Daily Reading Record" the (1) page number, (2) number of frames on the page, and (3) number of frames correct. Each day graph for the child the number of pages completed within the 30-minute work period and note whether the number exceeded some reasonable goal, such as 6, 8, 10, 15, 20, etc., for the child.

4. Take whatever time is necessary for the child to correctly spell seven words dictated to him from the pages he has completed in the day's lesson. Print out in large, bold print the words he has spelled incorrectly the first time around and have the child trace the word, saying each letter, digraph, or dipthong sound as he traces it. Then have him "say it fast," blending all the sounds together. Have him repeat this procedure (Fernald, 1943) three times for each misspelled word until all seven words are spelled correctly.

These four procedures were demonstrated for the mother by the trainer during the first tutoring session with the child.[4] The mother was told to follow the four procedures demonstrated for one week and to return for a session where the trainer would monitor her use of the program and provide her with feedback. Since the programmed materials were almost self-explanatory, feedback usually focused on the mother's coordination of flash cards with new sounds introduced in the text and her administration of the spelling test and one-minute time sample of oral reading rate. Her use of contingency management and social reinforcement to maximize oral reading and work rates, and attitudes toward reading were also monitored. All the mothers had been urged to note improvements in reading and work rates and to provide social reinforcement (praise and approval) at appropriate times. These reinforcement procedures were modeled for her by the trainer during the first tutoring session.

Severe behavior problems (non-attending, refusal to work, etc.) were effectively dealt with through the use of a 30-minute stop watch. At the beginning of the 30-minute work period in the programmed text the stop watch was started. As long as the child was attending to his work, the watch continued to run and when the child had accumulated 30 minutes of work time, he could quit and go on to the next portion of the lesson. When all four tutoring procedures were completed, he could play, watch TV, etc. Whenever the child quit working and disrupted the tutoring session, the watch was stopped, costing some of his usual free time. If 30 minutes of uninterrupted work time were judged too long, the 30 minutes was broken down into two 15-minute work periods separated by 10 minutes of free time. The free time was earned by continuous work during the first 15-minute work period. During the earned free time, the mother read a story of the child's choice. Non-attending cost the subject a proportionate amount of his story time. Such a cost contingency has been very effective in minimizing non-attending behavior. The stop watch could usually be set aside after one week of shaping attending behavior. Such a rigorous program to maintain study behavior was necessary only in Steve K.'s case. Here making the length of his story time contingent upon study behavior in the preceeding work period was accomplished by setting a cooking timer for 25 minutes at the beginning of his 15-minute work period. When he had accumulated 15 minutes on the stop watch, his mother could begin his story time and continue until the cooking timer rang. If the stop watch had been interrupted frequently because Steve had refused to work, he may have found only five, three, two, or zero minutes of story time remaining at the completion of his work period. Initially, a time-out procedure (Patterson & Gullion, 1968, Chapter 8) was necessary just to keep Steve in the tutoring situation, he hated reading so much. Such extreme behavior control procedures were necessary for only the first two weeks of the tutoring program. When Steve discovered that success was relatively easy to achieve in the programmed reading texts, he no longer attempted to avoid the tutoring sessions.

Forty-five minutes per day represented a sizeable portion of a busy mother's work day, especially with other family members around. With so many competing demands on her time, it was assumed that mothers would have to view the tutoring situation as reinforcing in order to maintain the program over any extended period of time. Consequently, two procedures were introduced which were natural to the tutoring situation and which would provide the mother with both social reinforcement and feedback regarding progress for her efforts. First, weekly phone calls were made to the mother by the person supervising her tutoring program in order to collect the data on oral reading and work rates that the mother had been recording daily. Showing a professional interest in the mother's tutoring and the progress she was making contingent on her collecting data had been found to be effective in maintaining the parents' behavior in other intervention programs (Patterson, Cobb, & Ray, 1973). Second, periodic evaluations were made with a battery of reading achievement tests to provide the parents with objective evaluations of the child's reading growth in standard reading material. Since this was the original reason for the parents undertaking the home tutoring program, it was assumed that evidence of reading growth would reinforce their efforts and encourage them to continue the program.

The total professional time to train the mothers ranged from three to 20 hours. More time in direct supervision was given Steve K.'s mother because of the disruptive behavior initially encountered and because this was the first subject in the study. Approximately 20 hours of direct supervision was involved in this case to monitor progress throughout the program. However, it is apparent from the remaining cases and two cases begun since this write-up was completed that nowhere near this amount of time is necessary to train or maintain the mothers in most cases. Hence, three hours' training appears sufficient unless severe behavior problems are present.

Results

Effects on Reading Achievement

The pre- and post-test results are contained in Table 1. Post-test results are available for those subjects who remained in the tutoring program for at least six continuous weeks. The results for the two subjects for which both pre- and post-test results are available indicate an average gain of one year in reading level on the Wide Range Achievement Test for every 33 hours of tutoring. Gains are not as large in spelling, contextual reading, and overcoming reversals as in word recognition, but still represent significant improvement for the two subjects. Gains in

spelling grade level on the Wide Range Achievement Test averaged one year for every 72 hours of tutoring. The average gain in contextual reading on the Gates-McKillop Oral Reading Test were one year in reading grade level for every 40 hours of tutoring. The average gain on the Iota Word Test for Reversals and Confusions was one year in reading grade level for every 46 hours of tutoring.

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Insert Table 1 about here
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Effects on Classroom Behavior

Systematic observations of classroom behavior are available for the most disruptive of the three subjects (Steve K.). Steve's rates of deviant classroom behavior were obtained using a classroom observation system developed by Ray, Shaw, and Patterson (1968). The rates were determined by observations taken in the classroom by trained observers over four phases of treatment: (1) baseline, (2) contingency management alone, (3) contingency management plus home tutoring, and (4) follow-up plus home tutoring. The observers recorded each instance of deviant behavior for Steve and a randomly selected peer during alternating time periods. Deviant behaviors included excessive noise, aggression toward others, not attending to assigned work, inappropriate talk to peers, and inappropriate movement about the room. Classroom observations sampled an average of 32 minutes of Steve's and 13 minutes of a peer's behavior during each day's observation. Observations were made on adjoining days and the rates averaged for the two days in order to reduce error variance and reveal trends. The rates of deviant classroom behavior for Steve and his peers over the four phases of treatment are graphed in Figure 1.

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Insert Figure 1 about here
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Mothers' Motivation

The motivation of the mothers to provide daily tutoring was assessed by dividing the number of days in which the mother had agreed to provide tutoring (weekdays minus holidays, periods of illness in the family, etc.) by the number of days during which tutoring was actually provided. Steve's mother provided tutoring on 92% of the days she had agreed to tutor, John's mother provided tutoring on 79% of those days, and Billy's mother on 26% of those days. The mothers were encouraged to reassess their commitment

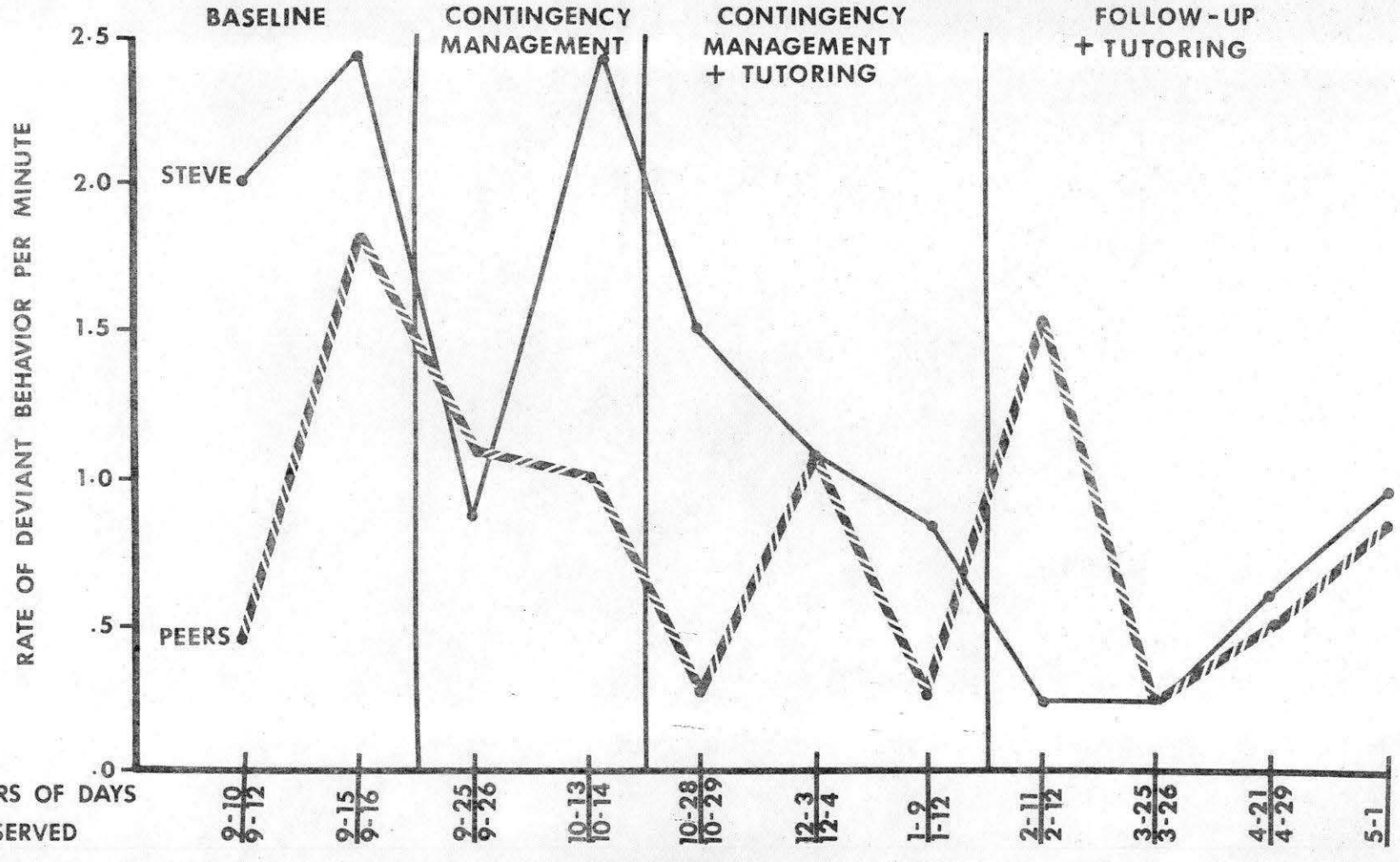
Table 1

Cumulative Test Results

Test	Steve K. (repeating Grade 3)				John B. (Grade 7)			Billy F. (Grade 3)
	Pre- 11/3	12/17 (after Book 2)	2/26 (after Book 6)	Post- 5/20 (after Book 8)	Pre- 7/29	11/19 (after Book 12)	Post- 1/30 (after Book 16)	Pre- 1/9
1. Wide Range Achievement Test								
Reading Test	1.4	1.8	2.5	3.8	2.4	3.3	4.4	1.7
Spelling Test	1.3	2.2	2.5	2.6	3.0	3.3	3.7	2.0
2. Gates-McKillop Reading Test								
Oral Reading	---	---	1.75	2.8	2.6	3.4	3.8	1.7
3. Iota Word Test for Reversals and Confusions (Marion Monroe, 1932)	less than 1.0	1.9	3.2	2.8	1.6	2.5	2.9	---
4. Oral Rate	---	---	20 wpm	36 wpm	26 wpm	60 wpm	91 wpm	---
Duration of home tutoring		11/3 - 5/18				8/10 - 1/29		1/30 - 6/26
Sullivan texts completed		Books 1 - 8				Books 5 - 16		Books 1 - 4
Hours of tutoring		79.5 hours (106 sessions)				64 hours (85 sessions)		21 hours (28 sessions)
Missed sessions (unexplained)		9 sessions				23 sessions		78 sessions

FIGURE 1

Rate of Deviant Behaviors Per Minute From Classroom Observations of Steve K. Over the Four Conditions: Baseline, Contingency Management, Contingency Management Plus Home Tutoring, and Follow-Up Plus Home Tutoring



MEAN RATE FOR EACH PHASE OF TREATMENT

STEVE:	2.2	1.5	1.2	0.4
PEERS:	1.2	1.0	0.5	0.8

to provide their child with tutoring following each evaluation of progress. All agreed to continue tutoring over the next four programmed texts when gains were evident in the current evaluation, except for Billy's mother. She terminated tutoring before the first progress check had been scheduled. She had tutored Billy for a period of three weeks, making it through almost two Sullivan texts when she suspended tutoring for a period of three months. She was encouraged to resume tutoring by offering her the opportunity to earn baby-sitting money for her children for each hour she tutored Billy at the rate of $1.00 per hour. She resumed tutoring for a period of four weeks. She even doubled up on sessions for several weeks in order to earn more money, but then terminated. The number of hours for tutoring provided and number of sessions missed in each case are recorded at the bottom of Table 1.

Discussion

Results of the home tutoring program greatly exceeded normal rates of reading growth for the average child and the pretutoring rates for the subjects in this sample. In the two cases for which pre- and post-test data were available, there was an average gain of one year in reading grade level for every nine weeks of tutoring. This represents an increase in rate of reading growth four and one-third times greater than the average expected gain of one month's growth per month of reading instruction. When compared to pretutoring rates of reading growth (average yearly gains), supplementing regular classroom instruction with the home tutoring program increased the rate of reading growth 26 times in one case and 13 times in the other. Figures 2 and 3 illustrate the changes in rate of reading growth.

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Insert Figures 2 and 3 about here
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Figure 4 depicts the changes in spelling skill on the Wide Range Achievement Test over the tutoring program for Steve K.

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Insert Figure 4 about here
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The results obtained with the tutoring procedures outlined in this study are compared with those obtained in studies of traditional and innovative remedial programs in Table 2.

- - - - - - - - - - - - - - -
Insert Table 2 about here
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FIGURE 2

Rate of Reading Growth Per School Year on the Wide Range Achievement Reading Test For Steve K. Over the Two Conditions: School and School Plus Home Tutoring

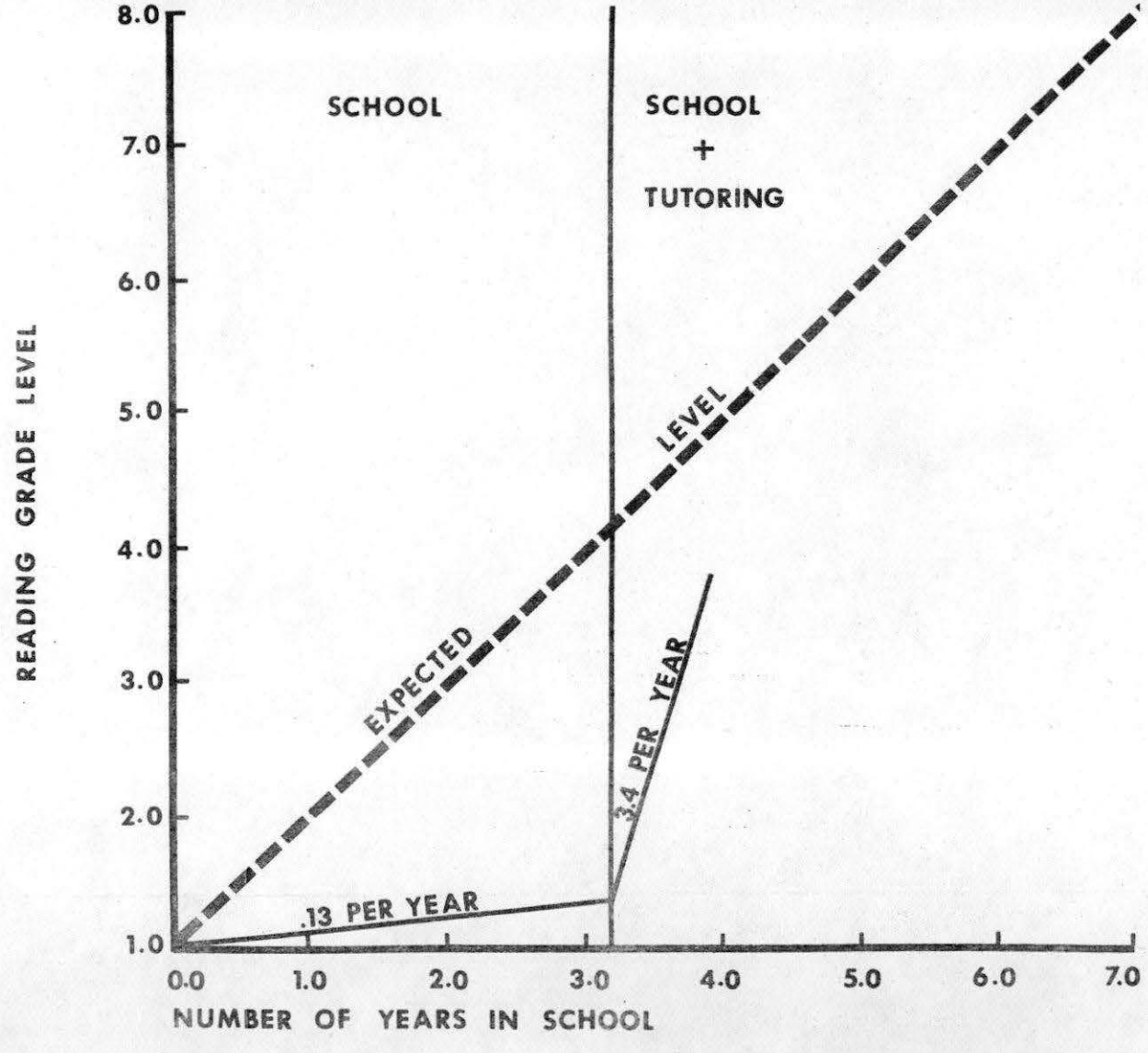


FIGURE 3

Rate of Reading Growth Per School Year on the Wide Range Schievement Reading Test For John B. Over the Two Conditions: School and School Plus Home Tutoring

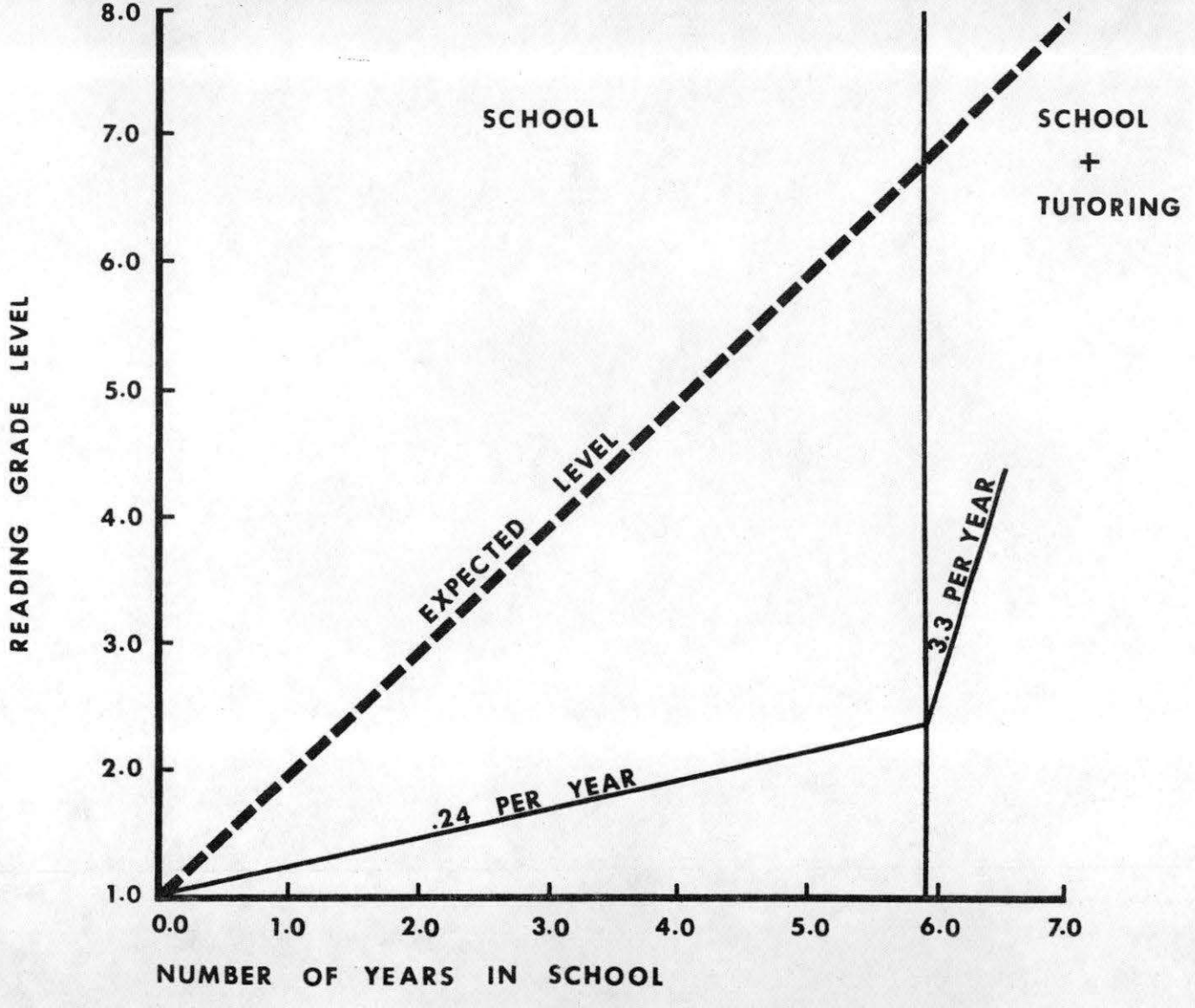
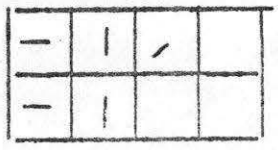


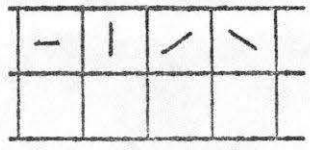
FIGURE 4

Reproductions of the Wide Range Achievement Spelling Test Protocols for Steve K. Taken on 10-1, 12-9, 2-26, and 5-20



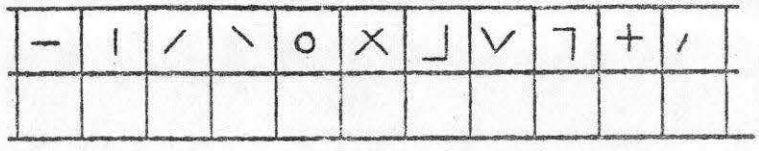
Name 10/1/

1. go		
2.		
3. An		
4. Roe		
5.		
6. ma		
7.		
8.		
9.		
10.		
11. Kat		
12.		
13.		
14.		
15.		



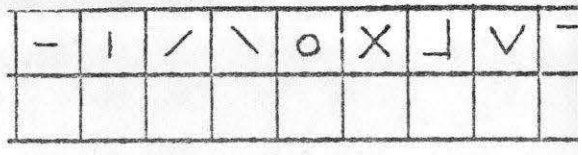
Name 12/7/

C 1. go		
C 2. cat		
C 3. in		
4. Boe		
C 5. abr		
C 6. will		
7. Mek.		
C 8. him		
9. se		
C 10. Cut		
11. a		
12. S		
C 13. mast		
14. dress		
15.		



Name 2/26/

C 1. gO		
C 2. cAt		
C 3. in		
C 4. boy		
C 5. and		
C 6. will		
C 7. make		
C 8. him		
9. Sae		
C 10. CUt		
11. COC		
12. lite		
C 13. mUSt		
14. deS		
15. rech		



Name 5/20/

C 1. go	16. ordre	16. ordr
C 2. cat	17. WCCh	17. woch
C 3. in	18. entr	18. entr
C 4. boy	19. gowne	19. growe
C 5. and	20. nochr	20. naeh
C 6. will	21.	21. ecspl
C 7. make	22.	22. eg
C 8. him	23.	23. Eichu
C 9. say	24.	24. sapri
C 10. cut	25.	25. reze
11. cua	C 26.	26. advi
12. lite	27.	27. rychu
C 13. mUSt	28.	28. Brea
14. dreS	29.	29. Secc
15. reech	30.	30. reasr

Table 2

Cost-Effectiveness Comparisons

Study	Balow, 1965	Thomas, Neilson, Kuypers, & Becker, 1968	Gray, Baker, & Stancyk, 1969	Staats, Minke, & Butts, 1970	Ryback & Staats, 1970	(present study)
Population sampled	Remedial cases	Behavior problems	Remedial cases	Culturally disadvantaged (2/3) EMR (1/3)	Learning disabled (3/4) EMR (1/4)	Disruptive non-readers
	Mean CA=11-3	CA 6 yrs.	CA 9-6	Mean CA=14-2	CA 10-9	Mean CA=10-6
Sample	79 Ss	1 S	9 Ss	32 Ss	4 Ss	2 Ss
Tutors	Graduate students in education	An undergraduate psychology major	Professionally trained teacher (?)	Paraprofessionals	Parents	Parents
Professional time for training and supervision of tutors	Practicum training (?)	?	?	3 hrs. training plus supervision time	9 hrs. average	9 hrs. ave. training plus 20 min. per wk. phone supervision
Criterion measure	?	Wide Range Achievement Test	Gray Oral Reading Test	Metropolitan Achievement Test	Spache Diagnostic Reading Scales	Wide Range Achievement Test; Gates-McKillop Oral Reading Test
Results	1yr./67 hrs. individual and small group instruction	1 yr./35 hrs. tutoring	1 yr./12 hrs. tutoring	1 yr./108 hrs. tutoring	1 yr./35 hrs. tutoring on word recognition 1 yr./27 hrs. tutoring on context reading	1 yr./33 hrs. tutoring on word recognition 1 yr./40 hrs. tutoring on context reading

Interpretation of the differences obtained in the various studies summarized in Table 2 is hazardous in view of the different populations, backgrounds of the tutors, criterion measures, and reading materials and instructional methods employed, and will be left to the reader. Suffice it to note that mothers can be trained to effectively tutor their disruptive nonreader at home without excessive cost in professional time. This is especially true when it is noted that the average time spent in direct supervision decreased with the new cases not included in this paper. It is also appropriate to comment on the study (Gray, Baker, & Stancyk, 1969) which reports achievement gains markedly superior to the other studies listed as their procedures suggest improvement in the present tutoring program. The Gray et al. (1969) study differs from the other studies in applying a "performance determined instruction" model which readjusts the rate at which new reading concepts are introduced between each tutoring session continuously individualizing instruction for each child. An optimum success rate is maintained resulting in maximum progress. By contrast, the programming of new reading concepts in the other studies listed in Table 2 appears to be more linear than branching as in the Gray et al. (1969) study. This is particularly true for the tutoring procedures employed in the study here. While care has been taken not to omit any of the pre-skills essential to reading and the introduction of new reading concepts is linguistically controlled, the pace with which new reading concepts are introduced in the programmed texts used here may be excessively slow (Sullivan, 1968). Unless a branching program of some type is employed, the moderately or mildly disabled reader may be inefficiently taught in such a linear program. This investigator is currently experimenting with a simple branching program whcih involves administering the four "progress tests" within each Sullivan programmed reader and assigning only those sections of the programmed texts preceeding progress tests on which errors were made. Whether this will increase the cost-effectiveness of the procedures outlined in this study currently remains an empirical question.

The effect of significant improvement in reading skills upon rates of disruptive behavior in the classroom is not new but has been noted in several studies. Becker, Madsen, Arnold, and Thomas (1967), and Thomas, Neilsen, Kuypers, and Becker (1968) each report a case in which there was a significant interaction between improvement in reading skills and teacher training in reinforcement procedures in the classroom. In these studies, it appears that the effects of the contingency management program administered by the teacher were minimal or did not maintain until the retarded reader was able to emit academic responses that elicited reinforcement from the teacher. Thomas, Neilsen, Kuypers, and Becker (1968) state that modern behavior theory:

> ...suggests that remedial procedures need to consider ways of strengthening appropriate academic, as well as reducing disruptive, behavior. It might be that for some children poor learning conditions "cause" the behavior labeled emotional disturbance. [p. 292.]

Tutoring of short duration may not be sufficient to effect noticeable changes in classroom behavior in most cases, however (Garis & Becker, 1969).

It does appear from the small sample employed that several demonstrations of the program, followed by weekly phone calls to collect data, and periodic evaluations with feedback regarding progress, is sufficient to motivate mothers to continue tutoring their child at home given several other factors. First, the reading retardation must be seen as severe; and second, home tutoring must be seen as necessary to effect or prevent some change in the child's school placement or attendance such as a double promotion to expected grade level or school exclusion. Either factor alone may not be sufficient to motivate the parents to take on the responsibility of tutoring their child at home. In the one case (Billy F.) where the mother failed to continue unremunerated tutoring beyond three weeks, the half-day school exclusion was terminated and the child re-admitted to school full days prior to the initiation of the home tutoring program. Furthermore, this case involved the least reading retardation of the three.

If the same results can be obtained by training the mothers of disruptive retarded readers to tutor their own child at less expense in professional time than can be obtained with professionally trained tutors, a new opportunity may be available for meeting the needs of this often-neglected group of nonreaders. Currently, such difficult remedial cases are occasionally refused remedial services because of disruptive behavior, are excluded from school, and/or placed in segregated special classes. If a school's resources for educating such children are limited, would not training the child's mother to assist be a viable alternative? Professionally trained reading specialists could considerably extend the number of cases served by functioning as consultants rather than tutors. Given the conditions above, the training of parents in remedial skills appears a viable solution to the remedial needs of the disruptive nonreader. However, the data presented here must be regarded as preliminary to more extensive investigation of these remedial procedures.

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Footnotes

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3. The subjects' names are in all cases pseudonyms.

4. A videotape demonstration of the four steps by one of the mothers has been added to the first training session.