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UNIVERSITY OF ALBERTA

THE EFFECTS OF SELF-MONITORING ON SECONDARY SPECIAL EDUCATION STUDENTS' ON-TASK BEHAVIOR

BY

LINDA BURNESS

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILLMENT FOR THE DEGREE OF MASTER OF EDUCATION

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Entitled The Effects of Self-monitoring on Secondary Special Education Students' On-task Behavior

Submitted by Linda G. Burness

In partial fulfillment of the requirements for the degree of Master of Education

In Special Education

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Abstract

Eight high school students (1 female, 7 males) in a cross-categorical special education program were the subjects of a study conducted to examine the effects of self-monitoring on classroom on-task behavior. The study was an A/B/A/B/C/D/E design which used tones to cue students to self-record at variable intervals. In addition, as students met specific criterion levels of on-task behavior, they were trained to self-initiate recording without the cues. Results indicate that all students made some gains in on-task behavior; however, the self-monitoring procedure appeared most beneficial in the less structured individualized mathematics class. In the structured group setting of the English/Reading course, baseline levels of on-task behavior were initially higher allowing less room for improvement. Individual student characteristics also affected the efficacy of the self-monitoring procedure which was considerably less effective with one very distractible student, and another who was intellectually in a slow-learner category. Students who were able to meet criterion and learn to self-initiated recording

were generally able to maintain the highest levels of on-task behavior even when all cues to record were removed.

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CHAPTER 1

INTRODUCTION

Over the past decade the concept of metacognition has developed considerably. Metacognition itself may be defined as having two main components which Palinscar and Brown (1987) describe as "the statable and stable knowledge one possesses about his or her own cognitive processes" and "the regulation of cognitive activity" (p.66). Underlying this metacognitive focus is an important shift regarding the ultimate control and responsibility for a child's learning. In the area of special education, behavior modification practices have been a strong influence on the types of interventions used with children needing such services. In general, the teacher assumes responsibility for determining which behaviors are most desirable, for altering the environment to enhance the possibility of their occurrence, and for determining reinforcers and reinforcement schedules. The child often remains a passive recipient of all this activity.

While the behavior modification approach has been proven effective, its long term efficacy and effects on

the student's feelings of personal competency may be questioned. Adelman (1978) argued that humans engage their environments actively and that thoughts and feelings must be considered as primary determiners of human behavior. He noted that although extrinsic motivators are initially effective they do not improve intrinsic motivation and may diminish it. Thus, the student may succeed academically but lose the initiative to continue without obvious external reward. In one study, Glynn, Thomas, and Shee (1973) noted that behavioral self-control techniques seemed to produce less variation in behavior than external reinforcement procedures. A reaction to this problem has been the trend to metacognition with complementary practices developed to teach children more self control.

O'Leary and Dubey (1979) discussed the importance of children in North American society developing awareness and control of themselves. They emphasized the importance of personal independence in our society, the reality that adults cannot always be available to control and/or reinforce children, and the fact that at some point children must be able to control themselves if they are to become functioning adults. While this is

true for all children, it is particularly important that those such as the learning disabled are helped to realize their potential to become independent.

In the area of learning disabilities, research suggests that these students have difficulties learning metacognitive strategies and applying them to new situations (Loper, Hallahan & Ianna, 1982; Swanson, 1989; Torgeson, 1977). In other words, learning disabled students are unaware of their own cognitive functioning and/or unable to regulate or control many of the mental strategies necessary for effective learning. Behaviors as well as mental activities are affected with the two components interacting to often undermine the learning disabled child's ability to succeed in the classroom.

One behavior frequently used to describe the learning disabled child is inattentiveness or distractibility. Eliason and Richman (1988) examined the behaviors and attention of 90 learning disabled children. Although 70% demonstrated no or mild behavioral difficulties, the remaining 30% (none of whom had been diagnosed Attention Deficit Disorder with Hyperactivity) most commonly showed attentional deficits

and overactivity. Evidence exists that there is a significant relationship between the ability to attend and the ability to succeed in school. McKinney, Mason, Perkerson and Clifford (1975) noted that children who attended to the work and were generally task-oriented tended to be more successful than children who were distractible or passive. A similar study by Cobb (1972) produced similar results with attending behaviors correlating highly with achievement. In addition, both studies noted higher correlations between better achievement for children who attend during work-oriented peer interactions than for those with a more passive style, suggesting the importance of active engagement in learning. Lahaderne (1968) also found a positive relationship between students' attention and scores on achievement and intelligence tests. A possible relationship between attention and students' ability to follow what was being taught was also suggested. It is possible to interpret these relationships as meaning that less able students became inattentive as the material progressed beyond their understanding. It is also possible that the inattentiveness was one of many metacognitive deficits attributable to learning disabled

students that contribute to their learning difficulties.

Loper, Hallahan and Ianna (1982) investigated the existence of meta-attention, or the awareness and regulation of the processes of attention. They noted that as children became older, they were more interested in the internal aspects of attention such as interest level or concentration. They also suggested that, although learning disabled children are aware of attention, they are inefficient in their application of that knowledge.

In view of this deficit, the use of a self-control strategy, self-monitoring for attention, was investigated to determine its efficacy in improving student attending behaviors and time-on-task, as well as possible effects on academic performance. To provide the necessary perspective for this study, literature is reviewed regarding the concept of attention, the cognitive and metacognitive models, and components, processes and research regarding the self-monitoring procedure.

CHAPTER II

A REVIEW OF RELEVANT LITERATURE

The Concept of Attention

The concept of attention has been a research area of considerable interest to both psychologists and educators since the late 1800's. Study began with the introspective schools and was taken up by behaviorist and gestalt psychologists (Krupski, 1980). The importance of attention as a construct was debated but not settled and interest waned. As models were refined and technology improved, research was renewed, particularly using behaviorist models. The development of operational definitions, and study of various aspects of the construct such as selective and sustained attention were seen as important (Krupski, 1980). The result of increased interest, as noted by Krupski (1980), was the numerous definitions and categorization schemes for the construct of attention which now exist. Most relevant to this study is the concept of voluntary sustained attention about which Krupski (1980) states:

> It is likely that most challenging school tasks would fit into this category. In each of these

> tasks, maintenance of attention is required for an extended period and attention is not directly controlled nor directly elicited by physical properties of the stimuli. These tasks all require participants to bring themselves back to the task when attention drifts. This process calls for a degree of conscious monitoring and effort that is characteristic of voluntary attention (p.108).

The Cognitive Model

More recently, the information processing model has become popular, emphasizing active participation in the learning process (Hallahan & Reeve, 1980). Research has tended to separate cognitive from metacognitive skills although the distinctions have not always been clear (Gerber, 1983; Slife, Weiss, & Bell, 1985). Gerber (1983) distinguishes problem-solving from cognitive strategy use (or metacognition) as follows:

> A strategy is most usefully understood as the skillful, deliberate, and coordinated use of problem-solving tactics. Tactics, on the other hand, are skills, clusters of related skills, or expeditious procedures associated with solving specific types of problems. The significance lies

> in the need to detect "blind rule-following" (Brown, 1978) which makes the child neither optimally efficient on a given task nor more adaptable with respect to the range of tasks he or she will encounter (p.259).

Slife, Weiss and Bell (1985) conducted a study supporting the separation of cognition from metacognition. For the purposes of the study cognition was defined as knowledge about mathematics (essentially the ability to solve a particular set of math problems). Metacognition was defined using Brown's (1975) definition dividing metacognition into two parts: knowledge about cognition and regulation of cognition. When normal and learning disabled elementary students were matched for intelligence, math achievement test scores, and performance of the same ten math problems, results indicated that learning disabled students were less knowledgable about their problem-solving skills in mathematics and less skilled in monitoring their problem-solving performance.

As well, Torgeson and Kail (1980) reviewed a large number of studies of memory processes in normal and learning disabled children. They believed that

cognitive processes which were once thought to be biologically based are now seen as dependent on goal-directed activity. This approach suggests that some children who perform poorly do so because they fail to use adaptive strategies which will help them to function efficiently in the school setting (Swanson, 1980). Learning disabled children, in particular, have been characterized as inactive learners (Torgeson, 1977). Recently, other authors (Gerber, 1983; Slife, Weiss, & Bell, 1985) have discussed this issue in terms of learning disabled children being inefficient or inflexible in their application of learning strategies. Torgeson (1977) also summarized several studies which suggest that ability to concentrate and work habits at the time of school entrance may be good predictors of future school performance. The practical implications of this research are that educators should attempt to develop these qualities in all students, particularly those who are deficient in them, or to appropriately remediate students lacking these qualities.

One approach to training for organization and self-control uses the cognitive behavior modification (CBM) procedures which have been found useful with some

learning disabled children (Hallahan & Sapona, 1983). First developed by Meichenbaum (1977), cognitive behavior modification is described by Hallahan and Sapona (1983) as being behavioral in that the goal is to change overt behavior; however, modification of the student's covert, cognitive processes are also believed to be involved. Kanfer (1980) describes his cognitive-mediational model as being based on self-regulation. Individuals are believed to control their own behavior through a combination of self-monitoring, self-evaluation and self-reinforcement. The first stage, self-monitoring, should lead to a reaction in which the individual compares his performance against some performance standard or goal. The individual may then reward or punish himself, usually covertly. The first stage of this CBM process, self-monitoring, is the focus of this study.

A number of studies have examined the specific tasks involved in self-monitoring as well as its effects in various settings and with a variety of populations (see Appendix A).

Effectiveness of Self-recording and Self-assessment

The actual procedure of self-monitoring consists of

two parts. Self-assessment is the first step in the process during which the student makes the judgement as to whether he or she is on task or not. The self-recording step involves the mechanics of making a record of the behavior such as marking a chart. One important question has been whether the assessment step alone is sufficient to affect on-task behavior. Rosenbaum and Drabman (1979) summarized a number of studies examining the effect of self-evaluation and concluded that it is not particularly effective unless matched with other techniques such as reinforcement or self-monitoring.

Lloyd, Hallahan, Kosiewicz, and Kneedler (1982) compared the effects of both self-assessment alone and self-recording on attention-to-task. The study was done in two parts. The first part of the study involved a 9 year old LD boy, using a multi-element design involving alternating treatments each day between self-evaluation, self-evaluation + self-recording, and reversal (or return to baseline. Although both conditions showed an improvement over baseline, the subject's prior experience with self-recording may have confounded the effects found with self-evaluation since he may not have discriminated between the small procedural differences

in them.

The second part of the study involved three LD students, aged 9-10 years (1 female, 2 males). It employed a multiple baseline design, and attempted to examine the effects of self-evaluation and self-recording separately. The authors concluded that self-assessment on its own is not significantly effective, while self-recording appears to have an effect. They suggest that self-assessment may prove useful as an initial step in fading self-recording procedures.

The Importance of Accuracy

Another important factor in self-monitoring procedures is the accuracy with which students record their behavior. Nelson and Hayes (1981) suggest that inaccuracy may not prevent self-monitoring from proving effective. Blick and Test (1987) examined this question in a study with 12 secondary level students in three cross-categorical resource classes (9 learning disabled, 2 educable mentally handicapped, 1 emotionally handicapped). The students were observed using a multiple baseline across groups design. When training and self-monitoring procedures were initiated, students were told that accuracy was important and that the

teacher would be checking their recording accuracy. On task behavior increased and was maintained at an acceptable level (80.4-91.5%) for most students, but the most accurate recorders tended to be on task more than their counterparts.

A particular problem with this study is the distinction the authors make between the verbal cues (referred to as audible) used to cue the students to self-record, and the chime cues used by the teacher to cue observations of the students. Although the researchers argue that the students did not associate the chimes with their own self-recording, it is possible that some did and this affected their own accuracy rates. Because of the chimes, the authors do admit that the final intervention stage cannot be said to have entirely faded all cues.

In another study with three LD boys aged 10-11, (Hallahan, Marshall, and Lloyd, 1981), although the main purpose of the research was to examine the effects of self-monitoring during oral reading instruction, an improvement in percentage of on-task behavior was noted after students were given feedback on the accuracy of their self-recording and how to improve it.

Thomas (1976) replicated and extended the length of an experiment by Glynn and Thomas (1974). He investigated the ability of second grade children to accurately assess their own on-task behavior. Although overall accuracy level was 78%, individual accuracy levels ranged from 56% to 95%. In addition, no consistent individual patterns were exhibited.

Another important question was raised in a study done on self-recording in the regular classroom (Rooney, Hallahan & Lloyd, 1984). The authors reported that reinforcement of use of the self-recording technique produced further increases in on-task behavior as compared to when there was no reinforcement for using self-recording. They suggested that further research be done on whether consistent use is more significant than honest evaluations.

At present, the issue of the importance of accuracy in self-recording is still open to debate; however as noted by both McLaughlin (1976) and Snider (1987), many of the earlier studies (Broden, Hall & Mitts; Glynn & Thomas) were confounded by multiple-treatment interference, use of external reinforcement systems and/or teacher praise and attention. As described above,

recent research has been more carefully controlled and seems to be suggesting that accuracy will prove to be an important factor.

Effectiveness of Self-monitoring With Different Populations

Another important concern is how effective self-monitoring is with a variety of special needs students. In the present trend to mainstreaming, the most useful interventions for regular classroom teachers will be those which can be used with a number of students. In addition, even within the special education stream, there have been calls for a cross-categorical approach since the similarities among learning disabled, low achieving and mildly mentally handicapped students are often greater than their differences (Ysseldyke, 1987). In the Blick and Test (1987) study there appeared to be no difference in the effectiveness of self-recording between LD and EMH students; however the emotionally handicapped student had both the lowest accuracy and the lowest on-task behavior percentages. Since this student had problems other than learning, one suggestion is that such students should be studied separately or using a single subject design until more factors relevant to

their problems can be determined.

Rooney, Polloway and Hallahan (1985) studied the effectiveness of self-monitoring with low IQ boys aged 8-9 years. The design used alternating treatments of self-monitoring for attention and self-monitoring for accuracy in math. Treatments were used randomly twice a week to prevent contamination from order of occurence; however, it seems possible that at least some confounding may have taken place if cognitive changes which are theorized to underlie cognitive behavior modification processes were really occurring. Either treatment appeared to increase on-task behaviors for two of the students while the combined treatments increased behaviors for all four, suggesting that the lower IQ students may need more comprehensive types of intervention. In addition, academic accuracy improved compared to baseline for most students, although no consistent relationship was found between academic accuracy and on-task behavior. Since all of these students were also low in arithmetic skills, this may support Snider's (1987) contention that "the failure of self-monitoring of attention to produce significant academic gains becomes more clearcut when attention is

perceived as **knowing what to pay attention to."** (p. 149) In other words, as a metacognitive skill, self-monitoring of attention may only benefit students who already have mastered academic skills sufficiently to perform the given task. Self-monitoring may not be appropriate for use during periods when students are just acquiring skills. Thus, it appears that more research is necessary to decide what forms of self-monitoring will prove most effective with students in this group.

Effects of Self-monitoring on Academic Performance

The effects of self-monitoring on academic performance are also of importance. While many studies presently focus on improving on-task behavior, this can only be seen as an intermediate step to the actual goal of learning. Unless academic performance is improved, the value of the procedure may be questionable. Much of the research done tends to focus on productivity rather than quality. Such studies tend to observe the number of movements per minute or amount of work completed.

Hallahan, Lloyd, Kosiewicz, Kauffman, and Graves (1979) used a randomly taped cue to demonstrate the effectiveness of self-monitoring with a 7 year old LD

boy. On-task behavior and academic productivity increased although the increases in the latter tended to be variable. Lloyd, Hallahan, Kosiewicz and Kneedler (1982) also measured productivity and found that it improved initially, but dropped off before the second reversal phase in the first part of the study (self-assessment vs self-recording) and did not increase at all during the second part (self-assessment + recording vs self-assessment alone). Other similar research (Heins, 1980; Hallahan, Lloyd, Kneedler & Marshall, 1982), cited by Snider (1987), also obtained results in productivity which were small and inconsistent.

Few studies have directly measured academic quality which may be considered the correctness of work or degree of excellence of performance. This is in contrast to production which emphasizes the quantity of work completed. This is a particularly important point since many students who have problems in school may complete the work assigned, but are unable to do it correctly.

Rooney et al. (1984) analyzed academic performance as well as productivity and found no relationship between percent of correct math questions and percent of

on-task behavior. However, Blick and Test (1987) reported anecdotal data which indicated that academic performance for students in the study improved in both the training and non-training situations. Since these were secondary students, it may be that they were more aware of the benefits of the procedures and, therefore, more motivated to use them once they saw results. Students are reported as requesting sheets to use on their own and asking that the procedure be continued. They also noted that students were pleased with the class atmosphere (e.g. less teacher "griping"). While it remains to be seen, age may also be a factor in the effectiveness of self-monitoring on quality of academic performance.

Self-monitoring and the Secondary Special Education Student

Research by Deshler, Schumaker, Alley, Warner, and Clark (1982) concluded that the greater setting demands and loosex structure of secondary schools create substantial difficulties for learning disabled students. In addition, special education programs at this level tend to involve segregated academic classes of relatively small size (15 students) while students are

integrated into the regular stream for vocational courses such as welding or physical education. Resource room settings are less common and a high degree of initiative and self-control is expected from these students. Thus, they are often placed unprepared in situations where demands are higher and support is weaker than they are used to. It is hardly surprising that follow-up studies (Levin, Zigmond & Birch, 1985) indicate a high rate of drop-outs among secondary special education students.

Much of the research done in the area of self-monitoring tends to focus on the elementary special education student. Little has been done to examine the usefulness of this process with secondary level students, particularly in group settings. Often, work with adolescent populations has tended to focus on students with highly disruptive patterns who are in self-enclosed programs or institutions. There, the emphasis is often simple behavior control as opposed to improved effectiveness as a competent student.

Self-monitoring in Group Settings

As noted previously, secondary special education students are generally served in larger groups as well

as more mainstream classrooms. At present, beyond the Blick and Test (1987) study, there is little research available as to the effectiveness of self-monitoring in secondary group settings. However, a number of such studies have been done with elementary children.

Rooney, Hallahan and Wills (1984) demonstrated that an entire grade two class could be trained to use self-recording procedures. Although only four learning disabled students were observed, the results showed that the procedure was adaptable to the regular classroom with its many interuptions of the usual schedule. This is particularly important as learning disabled students in a mainstream situation must be able to flexibly cope with such irregularities.

In a larger study (Sagotsky, Patterson & Lepper, 1978), 67 grade 5 and 6 students in an individualized math program were trained either in self-monitoring of on-task behaviors or a goal-setting procedure. The self-monitoring process proved to be considerably more effective than goal-setting and was generally used more consistently by the children. However, it was noted that the variability of the math materials used may have confused or hampered the children in their goal-setting

attempts. The authors suggest that one reason for the success of the particular self-monitoring process used was that students had been told the recording of off-task behavior should cue them to return to more appropriate behavior. Therefore, children were more aware of their off-task behaviors, but able to return to work more quickly in spite of the distractions which occur in a regular classroom setting.

Conclusions

In summary, it appears that self-monitoring will increase the on-task behavior of students in a classroom setting. What has not been demonstrated, as yet, is whether this procedure leads to gains in the quality of academic performance. As well, few studies have dealt with students at the secondary level. With the increased demands of the high school classroom for special needs students, self-monitoring could prove to be a valuable intervention. In view of these concerns, the purposes of this study were to investigate the following using secondary students: (a) the effects of self-monitoring on student on-task behavior (b) the relationship between accuracy of self-recording and percentage of time spent on task (c) the relationship

between percentage of time on task and quality of academic performance.

CHAPTER III

RATIONALE, DEFINITIONS, AND HYPOTHESES

Rationale and Definitions

The objective of self-monitoring training is to help students develop awareness of and assume responsibility for their own behavior. Special needs children, such as the learning disabled, often demonstrate low levels of sustained attention which in turn affect their ability to complete and monitor schoolwork, subsequently affecting academic performance (Hallahan & Reeve, 1980; Hallahan, Gajar, Cohen, & Tarver, 1978). As noted above they are also characterized as inactive learners. A study by Pearl, Bryan and Donahue (1980) suggests that learning disabled students believe external factors control both their success and failure and do not tend to see their own efforts as having much effect on achievement. Some of the programs currently in use may actually reinforce these beliefs since much of the control remains with the teachers who operate on the environment for the students.

One practice in special education settings has been

to suit the environment and materials to the student. In the area of interest for this paper, students who are distractible are given streamlined work stations with few distractors around them, or are provided earphones to shut out distracting noises. However, as Hallahan and Reeve (1980) comment, educators often reinforce passive states in children by rearranging the environment to suit their needs. It seems more effective to train students to become adaptable to a variety of situations which will greatly enhance their chances for success, particularly in the world outside of school which will not arrange itself for the convenience of the learning disabled person. Further, students who are continually off-task, whether disruptive or passive, will tend to absorb a great deal of teacher attention and time. As noted by Smith, Young, West, Morgan and Rhode (1988), external management programs take up too much teacher time. A review by Deshler, Alley and Lenz (1984) examines five methods involving extrinsic controls (counselling, token economies, contingency contracting, verbal feedback and cooperative group structures) and concludes that further research is necessary to clarify whether or not these procedures

help develop independent learners or improve academic performance. Smith et al (1988) also cite research by Drabman (1973) as support for their contention that in these programs improved behaviors are not maintained once external controls and reinforcers are removed.

Responsibility for oneself is also an important goal, particularly for secondary students. The positive response by students to the self-monitoring procedure as reported by Blick and Test (1987) suggests that adolescents are interested in interventions which will help them succeed in school.

In view of the above comments, it seems that self-monitoring for attention may be a technique which provides the benefits of actively engaging the student in the process of learning a broad strategy which may be useful in a number of school settings. A further advantage is that once training is complete and the strategies are initiated, the cost in teacher time is relatively small, freeing the teacher to engage in instruction rather than discipline.

Hypotheses

After examining relevant research on self-monitoring the following hypotheses were proposed:

Hypothesis I: Increased on-task behaviors as measured by observer ratings will be exhibited by the target students during the periods of time when the self-monitoring program is in effect in comparison to student baseline levels.

Hypothesis II: Target students who are able to sustain higher levels of self-initiated as opposed to cued self-monitoring will exhibit the greatest gains in levels of on-task behavior by the end of the self-monitoring program.

Hypothesis III: Target students who are able to sustain higher levels of self-initiated as opposed to cued self-monitoring will maintain increased levels of on-task behavior once all cues have been removed.

Hypothesis IV: Target students who are less able to sustain self-initiated as opposed to cued self-monitoring will exhibit a drop in levels of on-task behavior once all cues have been removed.

CHAPTER IV

METHODOLOGY

Subjects and Setting

The study was conducted in a rural composite high school with a population of approximately 870 students. The school offers a cross-categorical special education program for secondary students in the school division. The target students were enrolled in a self-contained class of 14 students for English 13 and Reading 10 courses which were conducted in the second 80 minute block of the school's timetable on alternating days. They were also enrolled in a similar class for Mathematics 14 which was run every day in the fourth block. All courses are planned to run for the entire year rather than one semester as would be usual for the regular stream. The expectation is that the students in the program will enter the regular stream in grade 11. Therefore, these students must prepare to write the common finals in English 13 and Math 14, and be able to cope with the demands of a regular classroom at the end of their first high school year.

Operation of the classes in the two blocks of time, however, is quite different, although the same teacher

instructs both classes and general rules of conduct and behavior are consistent. The English/Reading class occurs in the morning just prior to lunch when students are physically and mentally more alert. It is run as a group with activities changing once or twice per class. All students do the same exercises and assignments which are clearly laid out. Additionally, students are aware of the lunch hour as a time when privileges may be lost due to incomplete work. While this is true for both classes, the effects are more immediately felt since lost lunch time for incomplete math work cannot occur until the next day.

The Math class takes place after lunch when students tend to be at a lower energy level. It is based on individual study according to ability and mastery of skill levels. Students write pretests and work is assigned according to their needs. While a text is the main resource, worksheets and a computer are also used regularly for review and reinforcement of concepts. Students who are working at the same level may be helping each other in pairs or small groups. Tests are written when both the student and teacher feel the student is ready. Such tests are followed by a fifteen

minute break outside of the classroom. As a result, by the end of the study, three students were able to complete the course and take a physical education course in the fourth block while others were still working on the first third of the course. By necessity, this setting requires considerable self-control and discipline by the students who must keep themselves on task and learn to wait quietly for the teacher when they need help.

Rather than single out the students who would be observed during intervention, it was decided to train the entire class in the procedure and have all the students use it. Therefore, signed parental permission was obtained for all students in the group.

The eight target students had been selected by their teacher as exhibiting inconsistent patterns of on-task behavior. They were not steadily off-task each day, but tended to have "good" days when they completed necessary work without either distracting others or requiring continual teacher supervision. Other days were "bad" days when steady teacher control was necessary to accomplish even a minimum of assigned work. Further data gathered during the training of the

observers tended to support the choices of the teacher.

All target students had a history of failure in the primary or elementary grades and had received considerable resource room attention. They had been placed in a special education program upon entering junior high school in either the present school division or the one in which they had been previously attending school. Full scale IQ's fell within the normal range. In general all students ranked significantly low on the subtests in Reading, Written Expression and Mathematics of the high school form of the CTBS (see Table I for specific scores). The mean age for the group was 15-6.

Student 1 had been diagnosed as hyperactive in elementary school. He was given Ritalin at that time; however, after less than a year, his mother took him off the medication. He had been receiving special help through resource rooms or segregated programs since grade 5. At the time of intervention, he was highly distractible, rarely finishing any work and disturbing others around him with continual singing, foot tapping and chatter. He steadily resisted attempts to improve his work habits, claiming he was slow, and became hostile when expected to catch up at noon hours or

through homework.

Table I

Description of Subjects

Student	Age	WISC-R V	WISC-R P	WISC-R FS	CTBS %ile rank Read	CTBS %ile rank Math	CTBS %ile rank Written
1	15-7	96	104	100	8	18	n/a
2	15-7	88	88	87	4	5	1
3	15-2	92	109	100	4	7	4
4	15-4	105	102	103	2	13	13
5	15-3	101	117	109	1	20	26
6	15-9	88	95	91	5	1	15
7	15-5	78	96	85	7	12	n/a
8	15-8	79	84	80	1	11	19

Student 2 had been in resource room since grade 2 and a segregated special education program throughout junior high. He tended to be impulsive and loud in the classroom, often antagonizing other students. Repeated requests were necessary to keep him in his desk when he became restless or bored.

Student 3 had received resource help from grades

three to six before being placed in a junior high school special education program. His work habits were generally good; however, he was highly social and often prevented others from completing work which he could manage by visiting with them once he was done.

Student 4 had failed grade one and received resource help until grade four when his parents placed him in Edmonton Academy. His work improved, but they removed him to the junior high special education program so that he could be involved in sports and maintain a more normal social life. He comes from a financially well-off home and often has considerable amounts of money available with which he tries to buy things from other students. He tends to be easily distracted and speaks impulsively without consideration for others. He persists in having his needs met immediately and expects to have his say whether the occasion is appropriate or not.

Student 5 has been experiencing difficulties in school since the early grades and attended Evelyn Unger School for Language and Learning Development for his elementary school years. He then attended the junior high special education program. His home situation is

one in which there is considerable conflict with his mother and brother. Although generally a good worker, he sometimes comes to school exhausted, depressed and unable to concentrate.

Student 6 was first assessed in kindergarten where he was diagnosed as exhibiting high tension and insecurity which was manifesting itself in aggressive and violent behavior. He was assessed in grade one for learning difficulties and received resource room help from grades two to six before moving on to the junior high special education program. He is generally a good worker, but has a low tolerance for frustration. In addition, his use of language often tends to be inappropriate and highly distracting when directed at other students.

Student 7 is the only female of the target group. She had been receiving help in a learning assistance program since grade six. She is highly social, often late for class, and adept at finding reasons to leave. Early in the year she was caught skipping repeatedly. Her hostile reaction to the grade coordinator led to a confrontation with the vice principal as well. She has also run away from home once since the school year

began. Work habits tend to fluctuate with her mood swings.

Student 8 had been receiving resource help since grade one. He was placed in a severely learning disabled class in grade six before he went on to the junior high school special education program. Expectations from his mother are that he should be able to work in the academic stream if he tries hard. His response appears to be to work slowly at a rate he has decided on himself. Highly social, he uses charm and various manipulative games to get what he wants from other students.

Data Collection Procedures

All students in the class were trained in the self-monitoring procedure. Due to the practical considerations of data collection, only the eight target students were observed, but were generally unaware of their status since all their classmates were also self-recording. They were given numbers for observation and reporting purposes, although after five months in the classroom it was impossible for the observers not to become very familiar with both the target students and their classmates.

Dependent Variables

Students were given sheets on which to record their behaviors for each block of time. The sheets included a list of on-task behaviors and enough spaces to record their behaviors as cued. For the purposes of this study, on task behaviors were defined as (a) looking at the teacher when appropriate (e.g. during a demonstration or lecture) (b) looking at relevant material on the blackboard (c) talking with the teacher (d) reading relevant material (e) working on the assignment (f) having a hand raised to seek teacher assistance.

In a pilot for this study, it was found that secondary students who chose to use an additional section of the self-recording chart provided for self-initiated checks also tended to make substantial gains academically over the period of time that the program was in effect. A possible interpretation is that the students were aware of the need for on-task behavior and concentration much as suggested by Loper, Hallahan and Ianna (1982). The self-monitoring procedure gave them the means to engage in the appropriate behavior and improve their classroom performance. In older students it is not unlikely that they could then make a

connection between being on-task and the improved marks they were receiving, and decide to attempt some self-initiated checks of their behavior as well. Therefore, another section on the students'recording sheets included 10 spaces for self-initiated recordings. As students reached preset levels of consistent percentage of time on task, they were instructed to try to do a specific number of self-recordings without cues as well as the cued recordings. They were also asked to note the time when they did a self-initiated recording beside the square (e.g. 11:15), and instructed not to self-initiate recording immediately after a cue.

When a student was consistently on-task more than 70 percent of the time for four consecutive days, he or she was instructed to attempt 2 self-initiated recordings. Four consecutive days were chosen so that each week's performance could be examined and introduction of a new level could begin after the weekend. This simplified the process since several times the school week consisted of only four days. The 70% percent was chosen after examining data from the pilot. During selection of target students at that time, indications were that it was on-task behavior below the

70% range that drew teachers' attention and concern. Once a student had reached that level and was consistently on-task for 80 percent of the time for a week, he or she was instructed to attempt 5 self-initiated recordings. For consistent on-task behavior of 90 percent or more, the student was to attempt 7 self-initiated recordings. During the last phase of no cues, any student maintaining over 90 percent on-task behavior was asked to attempt 10 self-initiated recordings. Because of the greater self-control demands of the math class, data gathered during this time period was used to decide when students had reached criterion. It was decided not to use different numbers of self-initiated recordings for each class as this was considered to be too confusing for the students.

Originally, this research also included the collection of data on students' academic performance. For this data, a comparison group of another special education class composed of students who meet the same criteria as the students involved in the intervention, and are enrolled in the same courses at the same time of day with another teacher were to have been used. Each group was given identical written assignments four times

during the research period. They were graded by the head of the English department who is a teacher with eighteen years experience in teaching English and Language Arts. She did not teach any of the students in either group. Student work was identified through the use of school identification numbers only. The assignments were evaluated in terms of amount of work produced (i.e. total words; 1 word being equal to 5 letters) and quality using a standardized marking procedure. Unfortunately, by the time of collection of the third set of data occurred, attrition was so extreme in the comparison group as to make any statistical analysis meaningless.

In order to collect the students' impression of the self-monitoring procedure, students were asked to use the PMI strategy (Mulcahy et al., 1986) near the end of Intervention I, III, and IV. This required that they write down on a piece of paper plusses (or good things), minusses (bad things), and interesting things that they had noticed while the strategy was being used.

Data was collected daily during the middle part of the 80 minute blocks for about 30 minutes. The 30 minutes was split into three 10 minute segments to allow

10 minute breaks for the observer. This spread the observations over a 50 minute period allowing for observation of a broader range of tasks. It also helped to reduce observer fatigue in the latter part of the observation period. The eight target students were observed by grade 12 special project students leaving the teacher free to conduct the class as usual. This approximated a natural situation since senior students are often used as aides by teachers.

The observations were done using a momentary time sampling procedure allowing for 5 seconds of obsevation and 5 seconds recording time. With this system, the student was recorded as being on-task even if the on-task behavior occurred even momentarily during the observation period. The schedule rotated among the eight target students, yielding approximately 24 observations per student per class. Percentage of intervals on task was calculated by dividing the number of intervals on task by the total number of intervals observed and multiplying by 100. For example, if a student was observed as on-task for 18 of the possible observation intervals, the percentage of time on-task would be calculated as 18 divided by 24 multiplied by

100. Therefore, the student's percentage of time on-task would be 75%. As a recording procedure, momentary time sampling may provide the most accurate data since it randomly overestimates and underestimates the continuous measure. The final result is a fairly accurate average (Repp, Nieminen, Olinger & Brusca, 1988).

Interobserver Reliability

Reliability measures were obtained for all eight students for both the English/Reading and Mathematics classes. Arrangements were made to have the two observers work together in both blocks at three intervals near the beginning, middle and end of the experiment. This provided approximately 72 observations per student per block for comparison purposes.

Experimental Design

An A/B/A/B/C/D/E design was used where A was the baseline, B was self-monitoring at 5 minute variable cued intervals, C was self-monitoring at 10 minute variable cued intervals, D was self-monitoring at 15 minute variable cued intervals, and E was self-monitoring without any cues. The variable interval

design was chosen so that less predictable cueing system might encourage a more stable pattern of response, rather than the cyclical pattern often exhibited with fixed interval situations.

Procedures

Materials Four audiotapes with tones to cue recording were used. The tones were emitted at intervals as described above in the experimental design. Student recording sheets listed on-task behaviors and had ten spaces for cued self-recording and ten spaces for self-initiated self-recording. The observers had a different kind of sheet consisting of the target student names and enough squares to record 30 minutes of observations per sheet. (Examples of recording sheets may be found in Appendix B)

Prebaseline During the prebaseline condition, the observers practiced their observation skills to which they had been initially introduced away from the class. This accustomed students to their presence while the observers were wearing headphones and marking the sheets.

Baseline During baseline, the observers took measurements as described earlier for nine days.

students were already used to them as they had been present in the classroom for several weeks helping the teacher in various ways.

Training In the training phase, students were given definitions of on-task behavior along with specific examples of when to mark + or 0. The importance of on-task behavior was also discussed and possible benefits of the self-monitoring procedure were described. (e.g. fewer incomplete assignments, fewer problems with teachers over wasting time and improved grades). Students were then allowed to practice for two periods of each class while using the taped cues on a 5 minute variable interval schedule (i.e. the cues were taped at variable intervals designed to average out to every 5 minutes over the 50 minute period of time when the self-monitoring procedure was in use). The teacher reminded them to record and gave them feedback to help them improve accuracy. They were encouraged to ask questions about exactly what constituted on-task for specific situations. For example, one student was prone to frequent nosebleeds and concerned as to whether standing by the garbage can while dealing with one should be considered off-task. Other questions involved leaving

the room for various purposes, and what could be considered appropriate use of free time when work was completed early. Finally, honesty and accuracy were stressed as being more important than the occasional "0".

Intervention I (cues at 5 minute variable intervals; 8 days)

Procedures during this phase were the same as those in training; however, the teacher no longer gave students feedback on accuracy. At the beginning of each class students were reminded of on-task behaviors and that accuracy was important.

Return to Baseline (no cues or self-recording; 5 days)

Students were told that there were problems with the tape and that self-recording was not necessary. Observations were continued. No specific criteria were used to determine a return to Intervention I as several of the students exhibited high although inconsistent levels of on-task behavior. All target students did exhibit a return to patterns of on-task behavior similar to those observed during baseline. In addition, with eight students and two classes to consider, the group had to be considered as a whole with only one cueing

system for everyone. As well, time pressures of the semester system needed to be considered if the experiment was to be completed.

Return to Intervention I (cues at 5 minute variable intervals; 4 days)

During this phase students returned to their self-recording. At the beginning of the block the teacher reminded them of on-task behaviors and the importance of accuracy. Self-initiated checks (2 per block) were also introduced to students who had maintained consistent on-task behavior at or above 70% during Intervention I prior to the return to baseline.

Intervention II (cues at 10 minute variable intervals; 9 days)

During this phase students recorded their behaviors five times during the class. At the beginning of each block, the teacher reminded them of both on-task behaviors and the importance of accuracy. Students who were able to maintain 70% or more on-task behavior during the previous intervention phase were introduced to self-initiated checks. Those who were using the self-initiated checks and able to maintain 80% or more on-task behavior increased the number of self-initiated

checks to 5 per block.

Intervention III (cues at 15 minute variable intervals; 13 days)

This phase was particularly long due to the loss of several days to special activities immediately before a long holiday. As well, it seemed important that the students thoroughly review the self-recording procedure before moving to the uncued phase.Recording continued as before except students recorded behavior 3 times per class on an intermittent schedule. As usual they were reminded of on-task behaviors and the importance of accuracy. Introduction and increases in the number of self-initiated checks also continued as appropriate with students who were able to maintain on-task behavior over 90% being asked to attempt 7 self-initiated checks per block.

Intervention V (no cues, self-initiated recording only; 8 days)

During the last intervention, students were given recording sheets and reminded of on-task behaviors; however, they were told that the tape would no longer be played and that they would have to record their behavior whenever they thought of it according to the number of

times the teacher had given them. Students in the class who were not target students were given the arbitrarily chosen number of 3 self-initiated recordings. This was decided on as a necessary minimum so that all students would be involved in recording as they had been in the previous intervention conditions. Otherwise, there may have been some concern among the target students as to why they had to continue with the procedure when the rest of the class was not. For the same reason, target students who had not met the minumum criteria were given the same number as non-target students while other target students were instructed as appropriate for their levels of on-task performance.

From baseline throughout Interventions I to IV, the observers continued to measure the behaviors of the students as described earlier. The observation process was suspended for two days only during training.

In summary, the eight target students were observed over a period of 61 days. Approximately 24 observations per class per day were taken for each of the students. The students themselves were engaged in self-monitoring their own on-task behavior with the assistance of self-recording sheets listing the behaviors to be evaluated

and taped cues at variable intervals to help remind them to self-evaluate and record. The results, as discussed in the following chapter, are especially interesting when viewed from the perspective of the effects individual student characteristics and the structure of each class. These variables definitely played a role in the effectiveness of the self-monitoring procedures with the various students.

CHAPTER V

RESULTS

Interobserver Reliability

Occurrence agreements were calculated by dividing the number of intervals scored as on-task by both observers by the sum of the number of occurrence agreements and disagreements, and multiplying by 100 (Sulzer-Azaroff & Mayer, 1977). Total interobserver reliability was 82.9% for the English/Reading class and 82.3% for the Mathematics class (see Table II). This is somewhat low due to problems experienced by the observers in exactly synchronizing their observations. In spite of this, their actual percentages of on-task behavior for individual students were generally very close or the same suggesting that the moderate reliability scores may not be true indicators of agreement.

Table III

Interobserver Reliabilities: English 13/Reading 10

Student	Observations (% of agreement)			
	1	2	3	Total Averages
1	75	61	a	84
2	78	a	92	85
3	65	80	96	80
4	77	90	91	86
5	76	85	74	78
6	95	89	100	95
7	95	88	100	94
8	64	76	90	77
Total Averages	78	81	92	

Total Interobserver Reliability 82.9%

Table III (continued)

Interobserver Reliabilities: Mathematics 14

Student	Observations (% of agreement)			
	1	2	3	Total Averages
1	70	72	a	71
2	a	a	95	95
3	92	79	67	79
4	64	70	80	71
5	75	a	94	85
6	77	90	100	89
7	100	75	86	87
8	86	69	87	81
Total Averages	81	76	87	

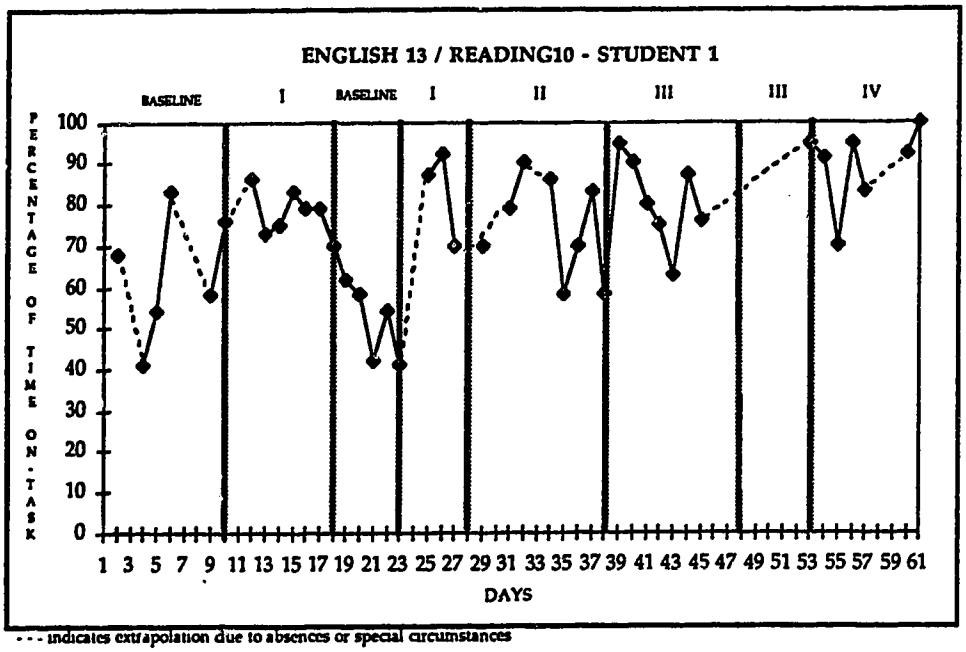
Total Interobserver Reliability 82.3%

On-task Behavior

Figures 1 to 8 present percentages of on-task behavior for each student for each day of experimental conditions in the English/Reading class. Indications are that all students made some gains in on-task behavior during the intervention. During the return to

FIGURE 1: STUDENT 1
PERSONAL CHARACTERISTICS:

- FULL SCALE IQ: 100
- high level of distractibility
- good interpersonal skills



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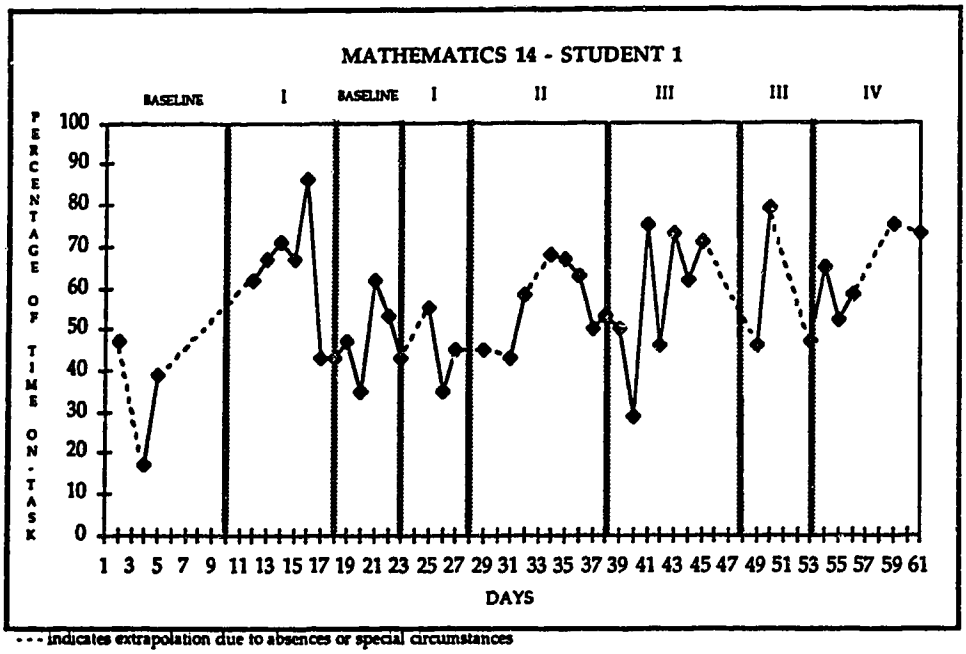

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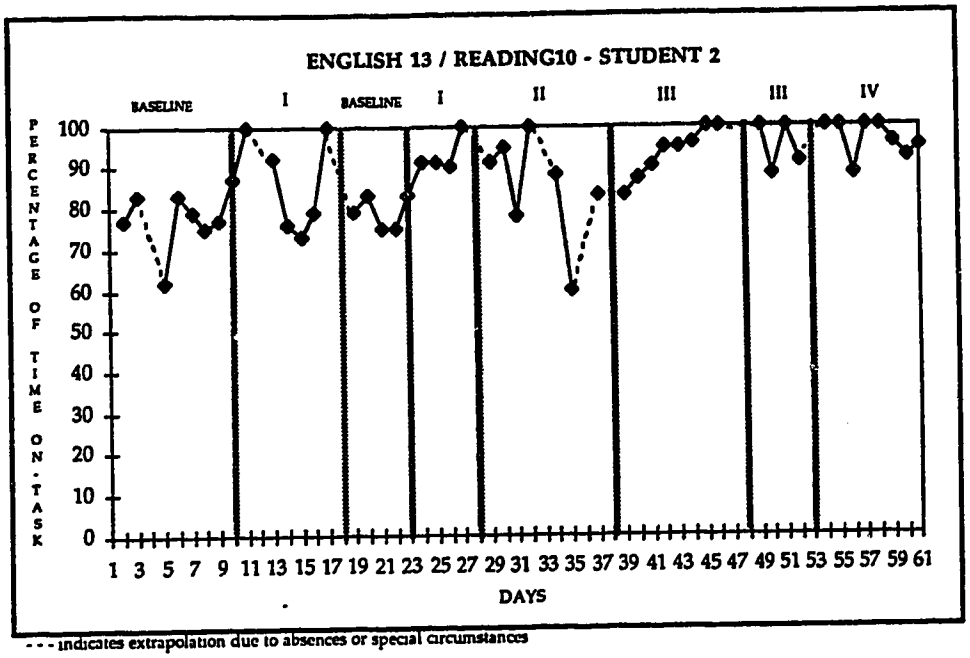
FIGURE 2: STUDENT 2
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 87
- poor interpersonal skills and conflict with other students



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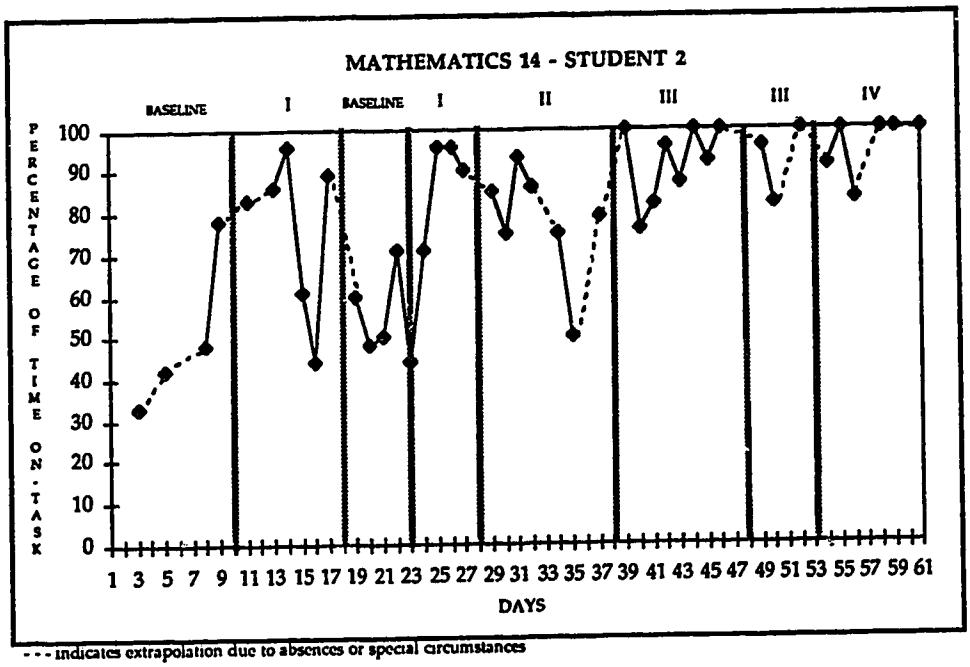

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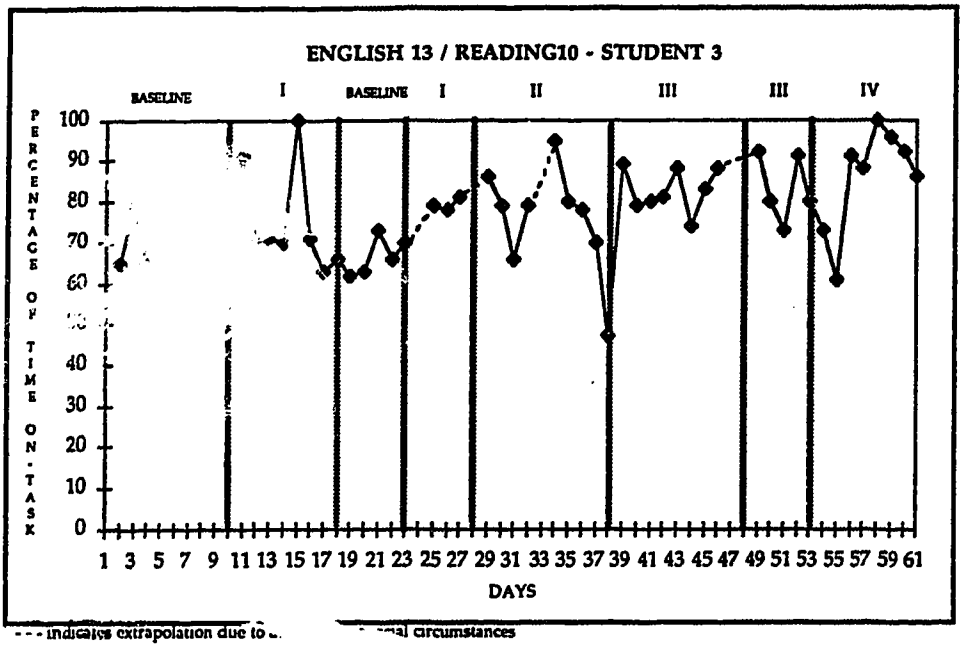
FIGURE 3: STUDENT 3
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 100
- good interpersonal skills, but high level of socializing disrupts other students



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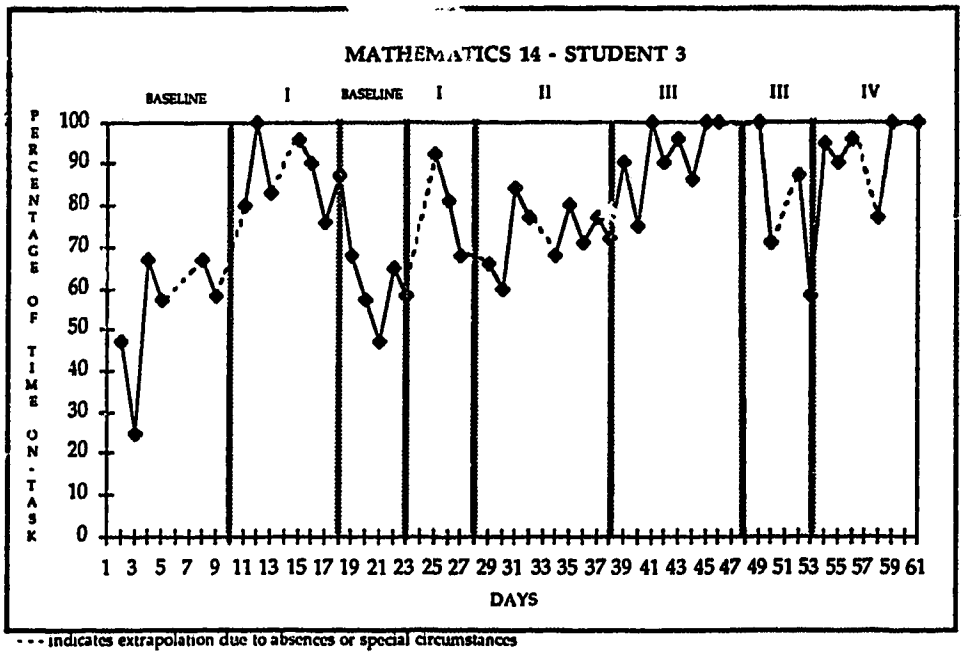

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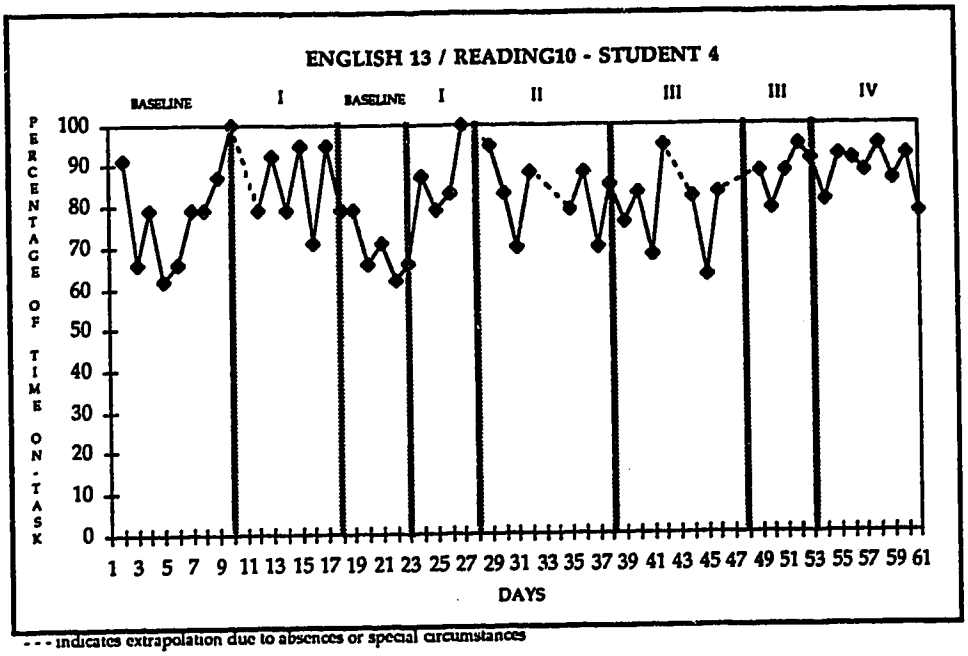
FIGURE 4: STUDENT 4
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 103
- distractible, with high level of socializing
- weak interpersonal skills



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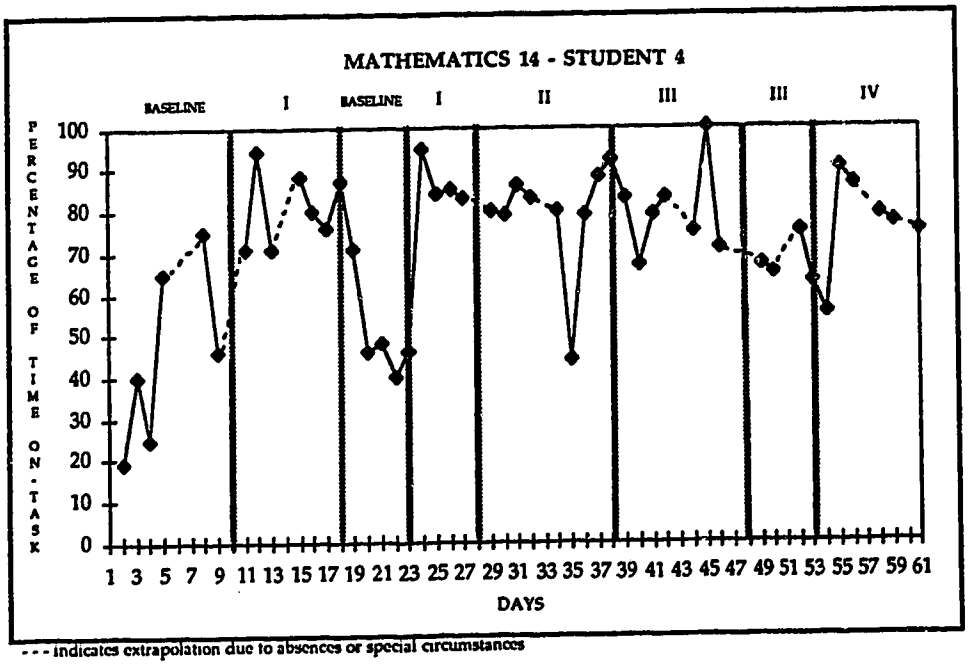

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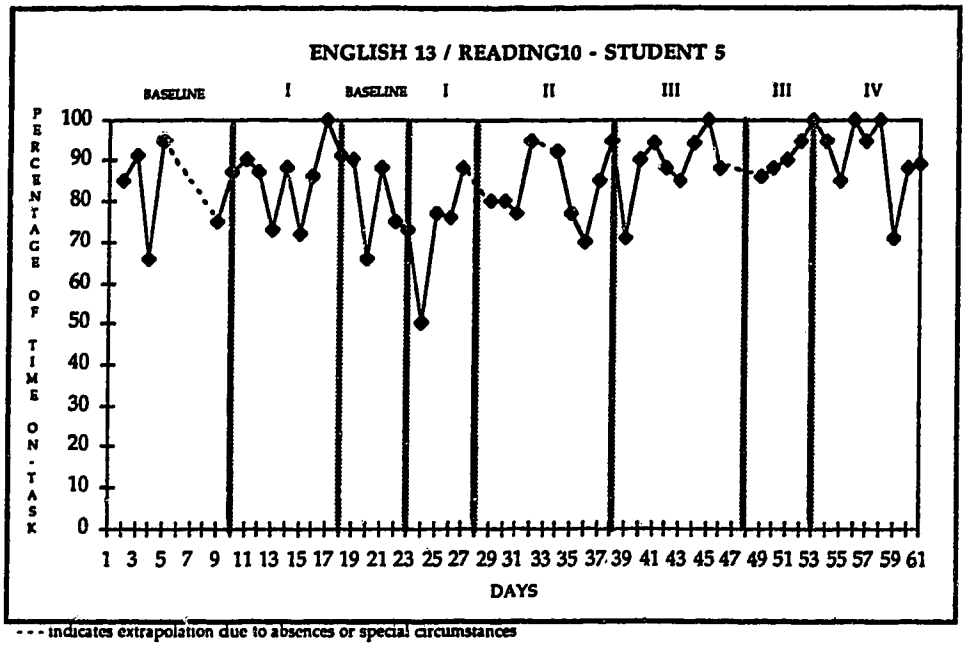
FIGURE 5: STUDENT 5

PERSONAL CHARACTERISTICS
* FULL SCALE IQ: 109
* good interpersonal skills



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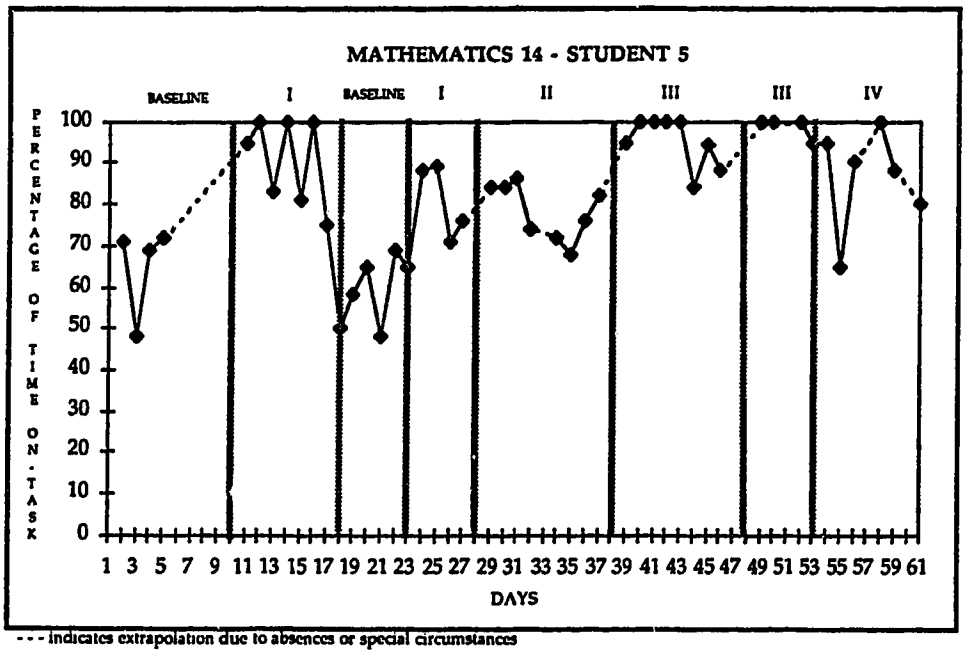

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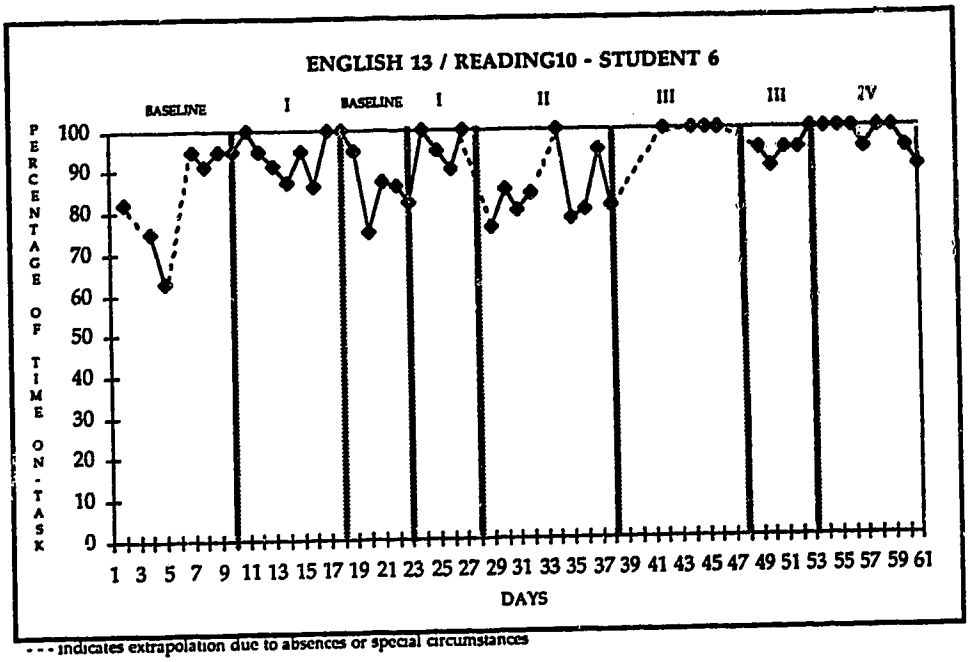
FIGURE 6: STUDENT 6
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 91
- history of emotional problems and low frustration tolerance



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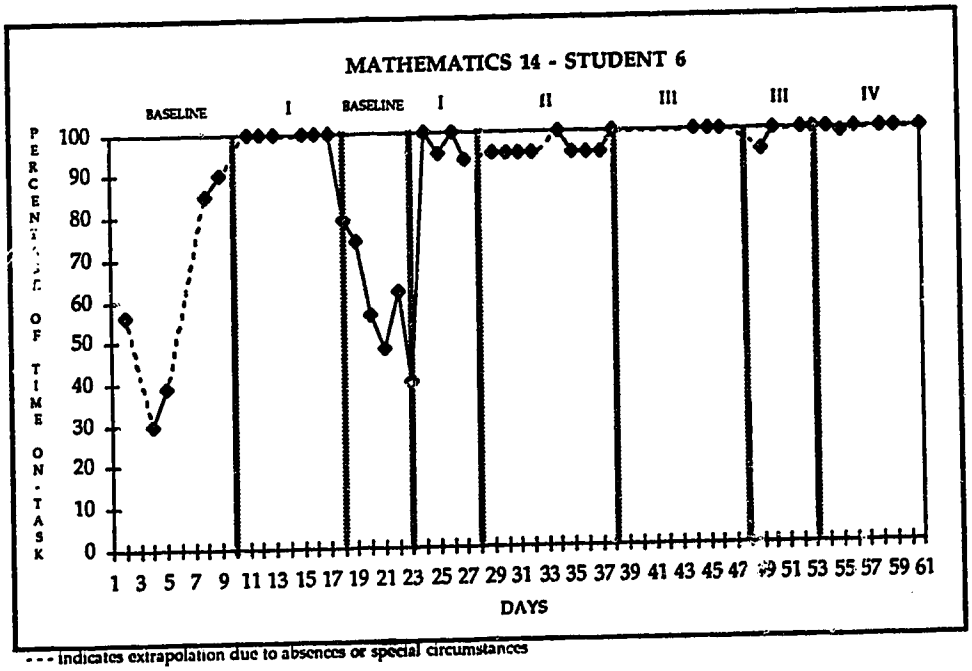

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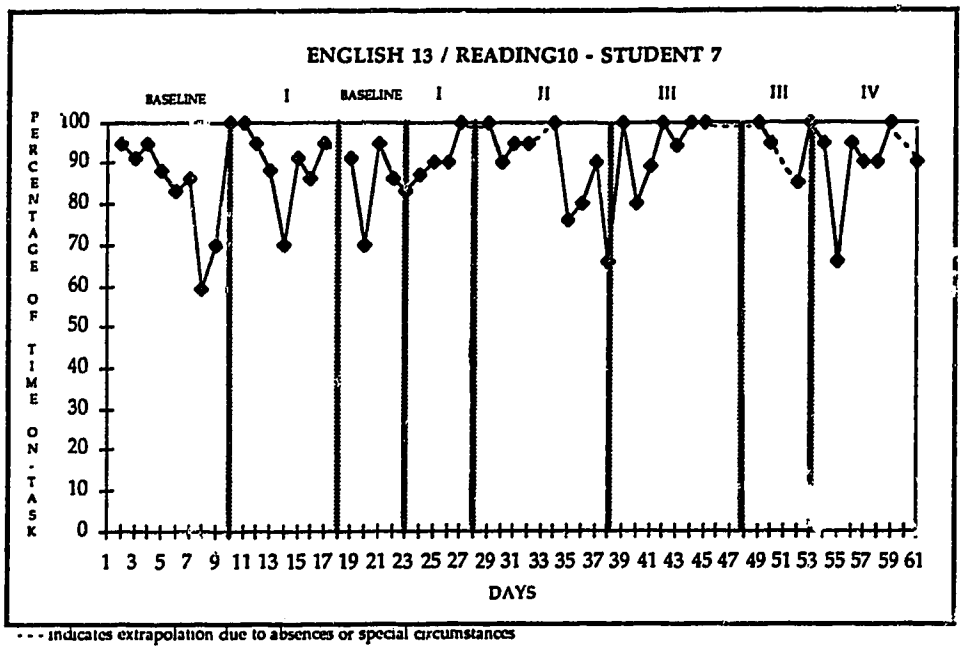
FIGURE 7: STUDENT 7
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 85
- good interpersonal skills
- high level of socializing interferes with functioning at school



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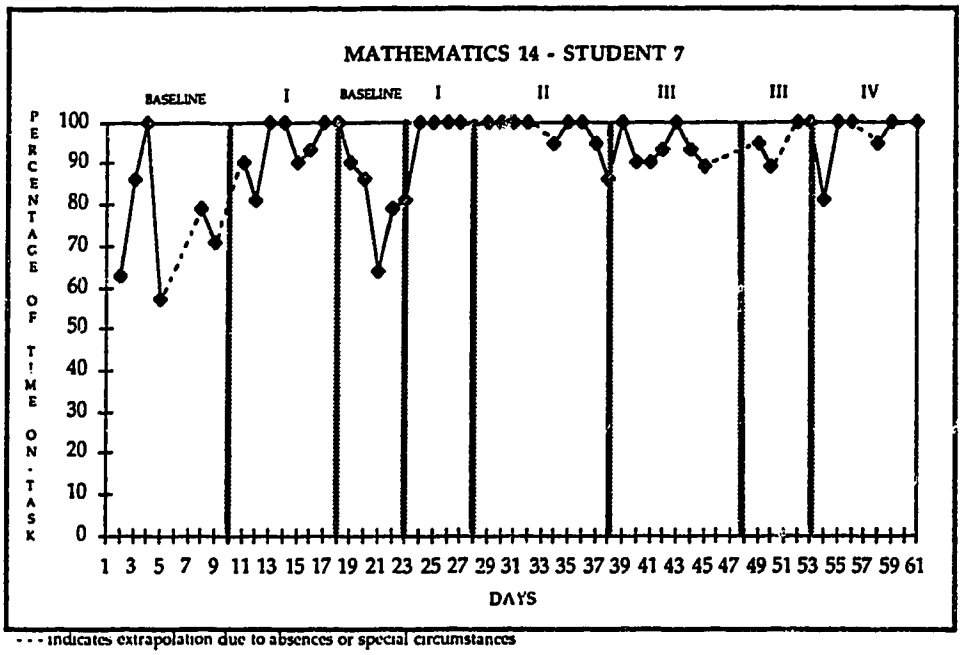

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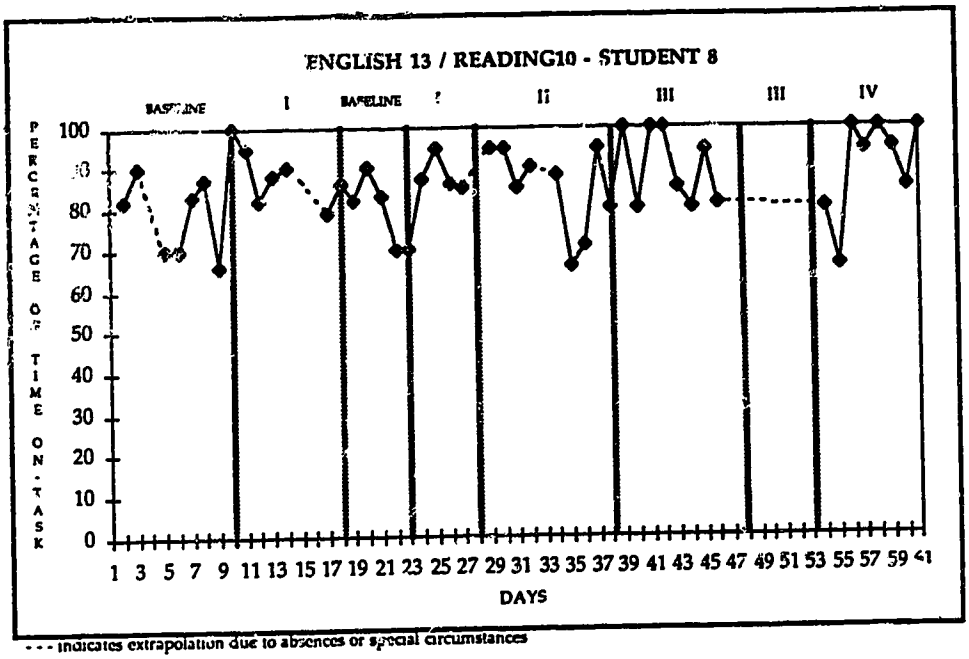
FIGURE 8: STUDENT 8
PERSONAL CHARACTERISTICS

- FULL SCALE IQ: 80
- good interpersonal skills
- high level of socializing



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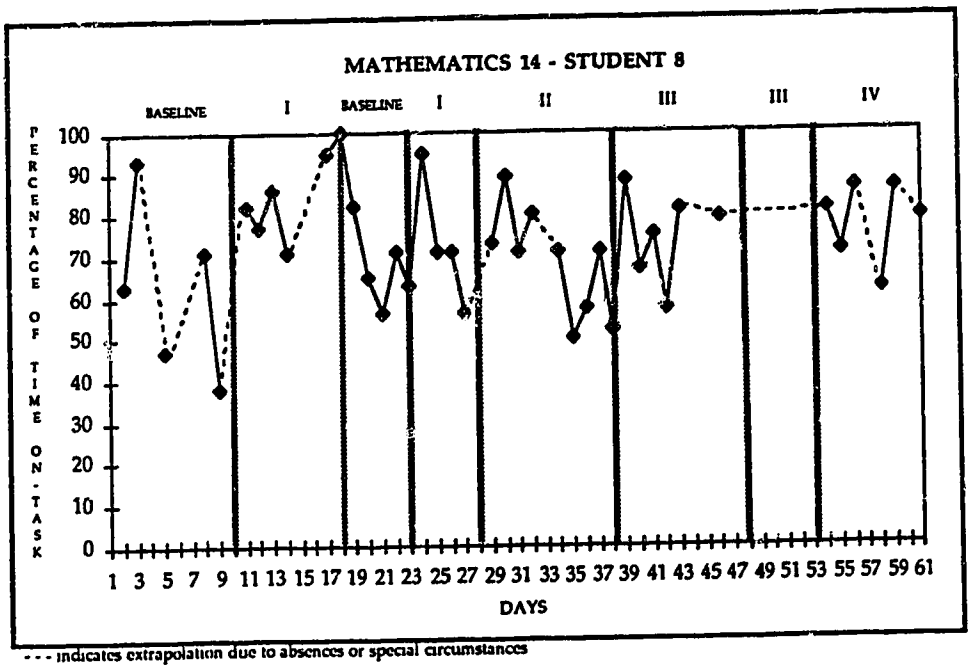

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baseline condition (observation of student behavior prior to intervention), a drop in on-task behavior can also be noted, suggesting that the intervention rather than some other factor was the reason for the initial increase during Intervention I (cues to self-record at 5 minute variable intervals).

Student 1, who made the greatest gains, began with the lowest percentage of on-task behavior (range over 6 days was 41%-83%), and had the most room for improvement. Other students generally had higher although inconsistent on-task behavior during baseline. During intervention, Students 2, 3, 4, 5, 7, and 8 made slight gains, but clustered above 75% with fewer of the large drops in on-task behavior seen prior to intervention. This is particularly noticeable for Intervention I (cues at 5 minute variable intervals) and II (cues at 10 minute variable intervals) conditions. For experimental conditions during Intervention III (cues at 15 minute variable intervals) and IV (no cues, self-initiated recording only), two students demonstrated considerable gains. Student 2 increased in on-task behavior to consistently over 80% during the first part of Intervention III (cues at 15

minute variable intervals). This increase continued into the second part of Intervention III and Intervention IV (no cues, self-initiated recording only) until on-task behavior was consistently over 90% during those conditions. Student 6 began with a high inconsistent pattern of generally over 75% on-task behavior. Range during baseline was 63%-91% over 7 days which shifted during Intervention III (cues at 15 minute variable intervals) and IV (no cues, self-initiated recording only) to consistently over 90%. The other students did not make similar gains in the last two Intervention phases, but continued patterns begun in Intervention I (cues at 5 minute intervals) and II (cues at 10 minute intervals).

During the Mathematics class, students demonstrated considerably lower percentages of on-task behavior during baseline than was seen in the English/Reading class (see figures 1 to 8). In addition, much wider ranges of performance were evident. As the intervention phases progressed, student percentages of on-task behavior increased while day to day variation decreased.

Student 1 was on-task 17%, 39% and 47% during the three days he was present in baseline conditions.

During Intervention I (cues at 5 minute variable intervals), his percentage of time on-task increased with a range of 43% to 86%. Performance dropped during baseline and remained low over the next three phases with most days' percentages being in the 50 and 60 percent range range with only an occasional drop below 45%. Of all the students, Student 1 had the most difficulty mastering the self-recording procedure. Due to his distractibility, he often missed the tones and would end up trying to remember if he had been on-task or not when he realized he was two or three tones behind the class. He often decided that he was "probably on-task" and, as a result, did not seriously examine his behavior.

Student 2 at baseline was on-task from 33% to 78% of the time. By the Intervention IV condition (no cues, self-initiated recording only), he had increased his on-task performance to a range of 83% to 100% (5 days out of 8 were at 100%). He tended to take the procedure very seriously and was conscientious about correctly filling out the forms. In addition, he was able to complete and pass the mathematics course, and move into a regular stream physical education course during that

block of time.

Student 3 also had very low on-task performance at baseline (25% to 67%). This increased to a range of 58% to 100% by Intervention IV (no cues, self-initiated recording only) with most days over 90% on-task for the last two intervention phases. In addition to being careful about recording, this student assumed responsibility for seeing to it that the tape with cues was operating correctly and turned over on time. This was done on his own initiative approximately half of the way through the Intervention II condition (cues at 10 minute variable intervals).

Student 4 showed the greatest day-to-day inconsistency during baseline (19% to 75%). Percentages of on-task performance increased steadily from over 70% during Intervention I (cues at 5 minute variable intervals) to generally over 80% during Intervention II (cues at 10 minute variable intervals). During Intervention III (cues at 15 minute variable intervals), level of on-task performance dropped to generally over 60%. Percentage of on-task behavior dropped again during Intervention IV (no cues, self-initiated recording only) with a range of 55% to 90%. In general, Student 4 did

not appear to take the procedure seriously. He often marked himself on-task for the entire period at once, particularly when self-initiated recording was introduced. Occasionally, he would go back and change his recording if he felt he had been off-task. He liked to strike the leg of his desk with a pen mimicking the sound of the cue to record. The confusion this caused in the room gave him a great deal of amusement. However, when the teacher commented that his work habits were improving and he was showing much more control, he asked that she tell his parents that he was improving. Therefore, it is likely that under his bravado was a concern to improve which manifested itself in some increased on-task behavior.

Student 5 had a somewhat low pattern of on-task behavior (48% to 72% over 4 days) at baseline which increased sharply during Intervention I (cues at 5 minute variable intervals). On the only low day (Day 14, 50%), the student approached the teacher and spoke to her privately. He stated that he knew his work had not been good that day, but he had been trying to make contact with his father who was no longer in the home. When he had spoken with him the previous night, his

father was not interested in seeing him. Because he was so upset, his concentration was poor. At that time arrangements were made for him to see the counsellor rather than remain in the classroom. After the return to baseline, time on-task generally remained above 70%. For Intervention III (cues at 15 minute variable intervals) range of time on-task was 84% to 100% with seven of twelve days at 100%. During Intervention IV (no cues, self-initiated recording only) performance was generally over 80% with one low day of 65% and two high days of 100%.

At baseline, Student 6 demonstrated the greatest range of on-task behavior (30%to60%). During Intervention I (cues at 5 minute variable intervals) his rate of on-task behavior increased dramatically to six days out of seven at 100%. In the Intervention II (cues at 10 minute variable intervals), he demonstrated on-task behavior consistently over 95%. By Intervention IV (no cues, self-initiated recording only), his range of performance had become the narrowest (94% to 100% with six of the seven days at 100%). Like Student 2, Student 6 took the procedure very seriously. He was also able to complete the Mathematics course and move into a regular

stream physical education course.

Student 7 began with relatively high although inconsistent rates of on-task performance at baseline (57% to 100%). During Intervention I (cues at 5 minute variable intervals), she increased her rate of on-task behavior to consistently over 80% with four out of eight days at 100%. In the return to Intervention I condition, she performed at 100% for all four days. This continued into Intervention II (cues at 10 minute variable intervals) in which six of nine days were at 100% with the lowest day at 86%. During Intervention III (cues at 15 minute variable intervals), percentage of on-task task behavior was 89% or higher. For Intervention IV, (no cues, self-initiated recording only) 100% on-task behavior was observed on six of nine days with the lowest day being 81%. Student 7 also responded well to the procedure and was conscientious about completing forms correctly.

Student 8 demonstrated a relatively inconsistent pattern of on-task behavior at baseline (47% to 93%). During Intervention I (cues at 5 minute variable intervals), his rate of performance increased to consistently above 70% with one day at 100%. After the

return to baseline, however, his pattern of on-task behavior remained inconsistent, although above 50%. During Intervention II (cues at 10 minute variable intervals), on-task behavior ranged from 50% to 89% with three days in the 50's. For Intervention III conditions (cues at 15 minute variable intervals), on-task behavior range was from 57% to 88%. Intervention IV (no cues, self-initiated recording only) produced percentages of time on-task from 62% to 86%. Similar to Student 1, Student 8 was unable to master using the procedure. Because of his highly social nature, he often forgot to fill in the forms and was regularly confused as to which tone the class was on. This led to random marking of the forms, defeating the purpose of self-examination before recording took place.

In summary, the self-monitoring procedure appeared most effective in the mathematics class where the students were required to use the greatest amount of self-control. Gains in the English/Reading class were smaller; however, there was less room for improvement since the class structure at baseline kept the level of on-task performance in a generally higher range. An important question here is whether or not an extensive

procedure such as the one used here is necessary for a highly structured group setting.

Self-initiated Recording

The third and fourth hypotheses of this research dealt with gradually handing over responsibility for self-monitoring to the students. The data indicate that those students who were able to assume this responsibility were also able to maintain consistently high rates of on-task behavior.

Student 1, who had the lowest on-task behavior at baseline and the most difficulty mastering the self-recording procedure, was not introduced to the self-initiated recording until the last phase when all members of the class were arbitrarily assigned 3 attempts at self-initiated recording. As expected, he was unable to meet the demands of the situation and rarely remembered to record. By the end of intervention, his on-task behavior was generally the lowest of the group, particularly in the mathematics class.

Student 2 was introduced to the self-initiated procedure at the beginning of the return to Intervention I (cues at 5 minute variable intervals) . He remained

at self-initiated recording until Intervention IV (no cues, self-initiated recording only). Although his overall levels of on-task behavior were generally high, he tended to have at least one lower day which prevented increasing responsibility. At Intervention IV, he was able to move up one level to self-initiated recording 5 times per day, and was able to maintain a consistently high level of over 80% on-task behavior.

Student 3 was not introduced to self-initiated recording until the second section of Intervention III (cues at 15 minute variable intervals) which occurred after the Christmas break. He was not able to maintain consistent on-task behavior above 70% and for Intervention IV (no cues, self-initiated recording only) was given the basic number of self-initiated recordings being used by non-target students. It is noticeable that for Intervention IV he was able to maintain a rate of on-task performance generally over 90%. Considering that his performance began to improve once he had assumed some responsibility for the management of the procedure, it is possible that Student 3 is a student who works better with increased responsibility and waiting for a specific criterion to be met was not

appropriate in his case.

Student 4 was one of the first to be introduced to the self-initiated recording procedure. After four days of over 80% on-task performance during the return to Intervention I (cues at 5 minute variable intervals), he progressed to self-initiated recording 5 times per block. He remained at this level through to the end of Intervention IV (no cues, self-recording only) as performance was still somewhat inconsistent and fell below criterion at least once in each week. He tended to treat the procedure as a joke, often filling in a series of times in the self-initiation section and marking +'s beside them at the beginning of the block. There was little or no true self-evaluation done by Student 4 for this part of the self-monitoring.

Student 5 was also one of the first students to begin self-initiated recording. Except for Day 18 which was discussed earlier, his performance was consistently over 75% and it was decided that due to the extenuating circumstances he could begin self-initiated recording. He self-initiated recording twice per class until after the Christmas break when his level was increased to 5 times. At the time of Intervention IV (no cues, self-

initiated recording only) he was self-initiating recording 7 times per class and on-task behavior remained consistently over 88%.

Student 6 was also one of the first to begin self-initiated recording and increased his level of recording each week to the extent that it was 7 times per class by the middle of Intervention II (cues at 10 minute variable intervals). At Intervention IV (no cues,self-initiated recording only), because he was maintaining on-task behavior consistently over 95%, he was asked to self-initiate checks 10 times per class. He was extremely conscientious about the procedure and developed the strategy of listing the times when he would check himself. He would then check the clock at regular intervals and, when the time was correct, evaluate himself and mark the form. This strategy was noticed and adapted successfully by Students 2 and 7, and used carelessly by Student 4. It is noticeable that over the time of the intervention conditions, Student 6 made considerable gains early on and maintained them throughout. One of the reasons may be that with the overlap between the cued and self-initiated recordings, he was evaluating himself as much as 10 and 12 times per

class when students who had not met criterion were evaluating themselves only 5 or 3 times.

Student 7 was also successful in meeting criterion for self-initiated recording at the earliest possible time. Once the procedure was introduced, she progressed rapidly, increasing her level of self-initiated recording with each phase. By Intervention III (cues at 15 minute variable intervals), she was recording 7 times per class on her own. She continued at this level through Intervention IV (no cues, self-initiated recording only). Her ability to maintain extremely high levels of on-task behavior was similar to that of Student 6. This would likely be due to extra opportunities for self-evaluation noted earlier.

Student 8 was one of the first students introduced to self-initiated recording, but he seemed unable to sustain the procedure. In addition to forgetting to record at the cues, he often forgot the self-initiated recording altogether. He did not seem concerned when this happened and tended to ignore that part of the procedure as intervention progressed in spite of instructions to try to continue. As noted above, he did make some gains in level of on-task behavior but

continued to have days on which he fell below acceptable levels

In conclusion, it appears that students who were able sustain higher levels of self-initiated as opposed to cued self-monitoring were also able to maintain increased levels of on task behavior both when cues were present and when all cues had been removed. Those students who were unable to reach criterion levels to begin self-initiated recording, or those who were not able to progress beyond the first level did not generally demonstrate as high or consistent levels of on-task behavior when cues were present or when they had been removed. Rather than a large drop in on-task behavior, these students tended to exhibit a slight drop coupled with a wider range of responses similar to those seen in the baseline condition.

CHAPTER VI

DISCUSSION

Discussion

This study was designed to examine the effectiveness of self-recording with external cues as part of a self-monitoring intervention to increase the on-task behavior of students. In addition, the ability of students to employ a self-monitoring procedure without external cues for self-recording was assessed. The relationship between the ability to self-record without external cues and to maintain high criterion levels of on-task behavior was also investigated.

The results of this study indicate that self-recording and self-monitoring can increase and maintain some students' on-task behavior even when cues are completely faded. However, the effects may be explained in a number of other ways. The purpose of the observers was noticed by students. Since they were aware of the purpose of the procedure this may have increased their on-task behavior, an effect that has been noted in other studies employing behavioral observers (Sulzer-Azaroff & Mayer, 1977). Another factor may be the complete

novelty of the procedure. Students may show more interest and cooperation simply because a process is new and, therefore, more challenging than their usual school activities. In this study, the extended time period over which it was conducted (four months), and the presence of the observers in the classroom for a month prior to beginning the intervention would have decreased such effects considerably.

In spite of its effectiveness this intervention is not equally useful for all students. Personal characteristics of the student and other factors tend to interact leading to very individual reactions to the self-monitoring procedure and its effectiveness.

As noted above, Student 1 appeared too distractible to master the technique and was never able to employ it effectively. Student 8 also had problems mastering the self-recording technique, perhaps because of his low level of intellectual functioning, and eventually tended to ignore the self-initiated recording altogether. Another important factor which may have affected these two students was attendance. Both of them tended to be absent with permission from home more frequently than other students in the class and this may have

interfered with their mastery of the self-monitoring procedure.

Student 4 exhibited a different set of difficulties. He tended to treat the procedure as a joke and used it to disrupt the class and gain attention. Because of his need to be noticed, this student used the process as a way to draw attention to himself by loudly commenting on how he was marking the sheets or imitating the tones. While self-monitoring did seem to increase his on-task behavior, the procedure was undermined by Student 4's other behaviors and likely was less effective for him than for other students.

In contrast, Students 2, 5, 6 and 7, whose on-task behavior showed significant gains while the self-monitoring intervention was being used, treated the procedure seriously and were conscientious about completing their self-recording correctly. In addition, due to the early introduction of self-initiated recording for these students the increased number of times that they were evaluating their on-task behavior was often considerably more than that of students whose on-task behavior had not been maintained at criterion levels. Therefore, the overlap of the two forms of

self-recording may have made it easier for these students to maintain their high levels of on-task performance.

It is also worth noting that Student 3 increased his on-task performance once he became actively engaged in running the tape recorder. He may provide an example of a student who needs to feel some form of ownership for what is being done in class before he can benefit from it.

Students who had not been targets for observation because they were able to maintain on-task behavior before the intervention was begun were the ones who complained that the bells were distracting. They also stated that they would lose their places or train of thought when they stopped to fill out the forms.

In view of the above, it is important to note that the effectiveness of self-monitoring appears to be affected by individual student characteristics. It cannot be assumed that it is useful for every student who has difficulty remaining on-task in the classroom.

An unexpected area of contrast was the differences between the two blocks of time during which the students were observed. The English/Reading class was in the

morning which may have affected the students' general performance. In addition, the class was much more structured than the afternoon course in Math. These factors seem to have worked to establish much higher levels of on-task behavior even at baseline. While increases in on-task behavior were noted for the English/Reading class, they were not as significant as those in the Math class since there was generally less room for improvement. Therefore, it appears that the self-monitoring procedure may be more appropriately used in less structured settings, or, perhaps, only with the most severely off-task students who may need the additional support to stay on-task.

Student and Teacher Perceptions of Self-Monitoring

Using the PMI strategy allowed the students to express their feelings about the self-monitoring procedure anonymously. Most students chose to sign their comments even though they were told it was not necessary. Generally, comments were positive, particularly under the section that allowed students to note things that they had found interesting. Several of the comments were as follows:

"It is great because you get to mark yourself down,

and I have started to settle down now."

"No one gets to bug you when you are working."

"I'm more behaved since I started the year."

"I see it helps you do your work. It brings up your marks because it helped me."

"I think that people are getting better in class."

Areas of concern in the minus area included the previously mentioned annoyance at interrupting work to self-record and the perception that not everyone was being honest in self-recording. Interestingly, comments about the nuisance of interruptions tended to increase with the later intervention phases as on-task behavior increased. Since, initially, it was only non-target students who had made comments about the interruptions, it may be that the target students were approaching a similar level of assuming responsibility for their own behavior. As the tones seemed to be the greatest source of irritation, one hypothesis might be that as students gained more control over their on-task behavior, they felt less need for an external cueing system to help them evaluate their own behavior. There did not seem to be the same level of annoyance with the self-initiated recording, possibly because the students could control

the timing for recording themselves and fit it into natural breaks.

Classroom atmosphere was also pleasant during the study. The teacher/researcher noted that more material was being covered than was usual before the intervention was introduced. Students who had not been able to complete assignments prior to intervention (e.g. Students 1, 5 and 6) were able to do so. Most students were able to enjoy some periods of free time which served as strong reinforcement for them to keep up their work. Student 5 was able to find employment in the school cafeteria which required him to leave the English/Reading class fifteen minutes early on a regular basis. In spite of this he was able to keep up his work and maintain his grades. Other students such as Student 1 and another non-target student became willing to complete work at lunch, often remaining without being asked until assignments were completed. In addition, once students began to recognize that marks were improving, they began to elicit reinforcing comments from the teacher with questions such as "I'm doing better work now, aren't I?" There were also comments to the effect that some students wanted the teacher to let

their parents know that she thought they were being responsible at school. In summary, most of the students showed interest and concern about how they were doing in school. They seemed to view self-monitoring as a useful tool to help them improve which, in spite of distractibility and other problems, is what most students with school problems want.

From the teacher's point of view, training the students in the intervention was relatively easy. After the initial two days of training, little time was required to run the procedure as handout and pick up of recording sheets became part of the class routine. Therefore, cost in terms of time and effort taken from the actual academic work was very slight.

Limitations

As noted above, there may have been other variables such a individual student characteristics and setting differences which confounded the results of this study. Due to the nature of the experiment, subjects were specifically selected rather than chosen randomly. Therefore, the results can only be considered to a very specific group of students. The presence of observers and knowledge of the purposes of the intervention may

also have affected the subjects' performance.

Although subjects did increase in percentage of on-task behavior there is no data indicating whether or not the subjects also improved academically. While indications are that children who are attentive, independent and task-oriented are more likely to succeed academically (Mckinney, Mason, Perkerson & Clifford, 1975), it is yet to be proven that improving these skills through employment of self-monitoring will also improve academic performance.

Time length of the intervention phases was controlled by the school calendar and other activities. The possibility of sufficient observations for statistical analysis of the data had to be discarded in order to complete the study before the end of the semester when several students were moving to other classes. Therefore, the results are descriptive of the effects of self-monitoring without the support of statistical significance.

Another difficulty with time restrictions is the lack of follow-up assessment to examine the maintenance and generalizability of the increased on-task behavior. Even if a behavior change has taken place, this does not

mean that it will continue (Sulzer-Azaroff & Mayer, 1977). However, as several target students for whom the self-monitoring procedure seemed particularly effective moved on to other classes, it was not possible to complete a thorough follow-up.

Conclusions and Implications for Future Research

As this study confirmed that self-monitoring can be an effective intervention, it also opened other areas of inquiry. To begin with, further research into the interaction between personal characteristics of students and self-monitoring is indicated. For some students, the procedure is unnecessary and merely a nuisance. Others find it difficult to master. They may need more specific training, or, perhaps, completely different interventions. Future research with self-monitoring should examine ways of identifying those students for whom the procedure will be the most effective and appropriate. The amount of external cueing necessary should also be studied as the external cues appear to become an irritant rather than a help as students become more independent. Some students may not need the step with external cues at all. Comparison studies employing externally cued recording and self-initiated recording

would be useful for investigating the appropriate use of external cues in self-monitoring.

Research is also needed for students who do not use the procedure well or do not appear to need it. Inquiry is also needed to find out if use of self-monitoring in a group situation such as the one in this study may be detrimental to the students who clearly do not need it as it is important that these students also be provided with an optimal learning environment.

The lack of data on to academic improvement related to the use of self-monitoring has been discussed above. Although it was not possible to complete this part of the study, student and teacher perceptions were that the students were covering more material which lead to improved grades and generally higher levels of academic performance. As the main purpose behind attendance in school is learning specified materials at an acceptable level, the importance of this area for further research cannot be overemphasized.

The students became aware of the observers' purpose quite early in the intervention although they were generally unaware of who was being of observed at any given time or even that only some students in the group

were targetted for observation. With secondary students this is likely to be a problem of research since they are more aware both of themselves and of their environment. One solution could be the use of videorecording classroom activities. Tapes could then be analyzed later away from the students. In practice, however, students became acclimatized to the observers who had been present before the intervention began and generally ignored this aspect of the intervention.

Any comments made about observations tended to occur near the end of the block of time when the observers had finished. Students often inquired if they would be ever able to know how they had done. A number of them continued to ask after the intervention was over and the teacher showed them graphs of their performances and discussed their improvements with individual students. Interestingly, it was only target students who showed this concern. It appears that one area for future research could be a research design which employs the data collected by observers or a classroom aide as a feedback device so that students can see and plot their own progress. Additionally, students could use the information to set further goals with the guidance of

the teacher. This may be particularly effective with secondary students who are often eager to assume more responsibility for their own lives.

A research design which allows time to collect sufficient data for statistical analysis would also lend credence to the effectiveness of self-monitoring as an intervention. The simplest way of dealing with the problem would be to use a secondary school which operates an unsemestered program leaving the entire school year available for both the intervention and a detailed follow-up period.

To conclude, self-monitoring offers promise as a useful intervention for helping some students increase their classroom behavior. In addition, it can be implemented easily with small cost in teacher and student time. Its importance lies in helping students to gain control over their own behavior rather than relying on adults for that control. The benefits in terms of improved self-confidence and responsible behavior are likely incalculable, but certainly worth consideration. Given that adolescents are often striving for independence, this study is an attempt to examine one

way in which they can be helped to become more self-reliant.

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Appendix A

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Broden, Hall & Mitts (1971)	Does self-recording increase class study time?	Low achieving grade 8 female	A/B/A/B/C/D/A A=baseline B=self-record C=self-record + praise D=praise only	Chart Student asks "Am I or have I been studying?" when she thinks of it.	% of Study behavior	-Study behavior increased 78 - 80% (self-record)	-Charts were not issued several times -Teacher attention was irregular.
	Does teacher praise increase class study time?			Teacher attends to student & praises study "whenever he can"	% of Study behavior	-Study behavior increased to 88% (self-recording & praise) & declined to 77% (praise only)	-Student had sought help-motivation was a factor.
	Does self-recording decrease talking out?	Disruptive grade 8 male	A/B/C/D/A/D A=baseline B=self-record (Session A) C=self-record D=self-record	Card Student marks 1 every time he talks without permission		-Variable decrease in talk outs -Study increased in shorter sessions (30% to 55% & 24% to 42%) but was not maintained in longer sessions	

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Glynn & Thomas (1974)	Will self-recording increase on-task behavior in a regular class setting?	Grade 3 students chosen by teacher as difficult to gain & hold attention n=9	Four phase A1,B1,A2,B2 A=baseline B= self-recording B2=self-recording & cueing with tones	Chart Student marks when on-task	% of 10 sec. intervals of on-task behavior	$\bar{x}$ increased 49.6 to 69.8% on-task with just self-recording	-Introduction of color coding 1/2 way through -Students confused as to on-task & off-task behavior
	Will self-recording & cueing increase on-task behavior in a regular class setting?					$\bar{x}$ increased 50.78% to 91.11% on task with self-recording & cueing	-Frequent activity changes -Checks to be exchanged for free-time; therefore, external reinforcer in effect

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANSTS	DESIGN	INDEPENDENT VARIBLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Sagotsky, Patteron & Lepper (1978)	Will self-monitoring and goal-setting used individually & jointly increase on-task behavior & improve academic performance	Regular stream grade 5 & 6 students in individualized math program goal-setting: n = 16 self-monitoring: n = 17 combined: n - 16 control: n = 18	Non-equivalent group comparison	Charts Self-monitoring: student marks + when on-task; - when off-task Goal-setting: students writes page & problem no. goals	Self-monitoring: no. of 10 sec periods spend on-task vs off-task Goal-setting: average no. of problems completed successfully each day.	Self-monitoring: -increased on-task behavior -increased rate of progress Goal-setting: -did not increase on-task behavior did not enhance self-monitoring -treatment did not affect progress through program Significant differences in no. of students who failed to use goal-setting as compared to those using self-monitoring.	-Variety of math materials may have hampered goal-setting.

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Hallahan, Lloyd, Kosiewicz, Kauffman & Graves (1979)	Does self-monitoring improve performance on seatwork in hand-writing & arithemetic?	LD male with attention problems age 7-11 IQ 121 n = 1	Multiple baseline across tasks & reversal A/B/A/B/C/D A=baseline B=tape C-no tape D=self praise	Sheet tape with a "beep" (interval 10 - 90 sec) Student asks "Was I paying attention?"	% of 6-sec interval on task Rate of hand-writing (correct words/ minute) Rate of arithemetic (correct/ minute)	-On-task behavior increased & remained high during fading -Academic productivity increased but varied	-Multiple baseline avoids need to return to baseline

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Hallahan, Marshall & Lloyd (1981)	Does self-monitoring of attention increase on-task behavior during small group reading instruction?	LD male ages 10 - 11 years. IQ 87 - 106 n = 3	Simultaneous phase change A/B/A/B/C/D A = baseline B = self-record C = cued self-assessment/ no self-record D = noncued self assessment	Self-monitoring on cue with wrist counters; non-cued; self-assessment only	% of time on-task momentary time sample at 2 second intervals	$\bar{x}$ levels of on-task behaviors were approximately double during treatment compared to baseline. Slight drop during fading.	-Controlled for token economy in class-tallied. -No more reinforcement than at other times. -Improvement after feedback re: accuracy.

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Lloyd, Hallahan, Kosiewicz & Kneedler (1982)	Is self-assessment alone as effective as self-assessment & self-recording in increasing on-task behavior & productivity during math?	LD male age 9 IQ 109 n = 1	Multi-element (alternative treatments each day) & reversal	Self-evaluation with & without self-recording	% of intervals on task 6 sec. whole interval/on-task whole time	-Both conditions showed improvement from baseline; no difference between conditions	-Prior experience of self-recording may have confounded effects of self-evalution
					teacher's precise statements	-Initial improvement in productivity followed by drop	-Points given for complete assignments
					rate/min of movements re writing	-No improvement for evaluation alone	-Alternating treatments to avoid problem of return to baseline
	Which is more effective in increasing on-task behavior: self-assessment or self-recording	LD students age 9 - 10 yrs IQ 78 - 105 n = 3	Multiple Baseline & simultaneous A=baseline B=self-assess C=self-record	Self Evaluation without self-recording	% of observations on task time sampling (6 sec.)	-Some increase with self-recording	-Multiple baseline to avoid problem of reversal design
					rate/min of movement	-No increase of productivity	-Multiple baseline to avoid problem of reversal design.

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Rooney, Hallahan & Lloyd (1984)	Does self-monitoring increase on-task behavior in a regular class setting?	LD 2nd Graders in a "regular" classroom n = 4	A/B/A/B/C/B/C A=baseleine B=self-record C=self-record + reinforcement	Sheet self-recording of on-task behavior according to given definitions.	% of time on task time sampling (2 sec.)	On-task behavior means increased A = 24% B = 60% Increases even greater with reinforcement. C = 86%	-Interruptions due to play practice, assemblies, vacations -More natural environment
Rooney, Polloway & Hallahan (1985)	Does self-monitoring attention increase (a) attention (b) academic performance? Which is more effective; self-recording, academic accuracy or attention? Will a combination of the 2 above be more effective than either in isolation?	LD males ages 8 - 9 yrs IQ x = 76 n = 4	A/B/A/C/A/C/A A = baseline B = alternating treatments C = combination treatment	1) Self-recording of on-task behavior (audio cue). 2) Self monitoring of accuracy on math problems (visual cue)	Time sampling (10 sec) 1) % of time on task 2) % of accuracy on seatwork; academic productivity	1) Either treatment increased behaviors for 2 students. 2) Combined treatment increased behavior for all 4 students. 3) Improved accuracy compared to baseline for most students. 4) No consistent relation between % academic accuracy and % on-task behavior.	-Possible confounding with number of treatments & variables involved.

(Appendix A continued)

SUMMARY OF SELF-MONITORING STUDIES

STUDY AUTHOR(S)	RESEARCH QUESTIONS	PARTICIPANTS	DESIGN	INDEPENDENT VARIABLE(S)	DEPENDENT VARIABLE(S)	RESULTS	VALIDITY
Blick & Test (1987)	Is self-recording still effective in the absence of an audible cue?	Secondary students in 3 cross-categorical resource classes n = 12	Multiple baseline across groups	Chart Students marks + when on-task 0 when off-task	% of on-task behavior	Students on-task behavior increased & maintained at acceptable level (80.4 to 91.5%)	-"Audible" cue was verbal command -Absence of "audible cue" conditions still used a chime.
	Does accuracy of self-recording have an effect on self-monitoring effectiveness?				% of on-task behavior % of accuracy match with teacher	Most accurate recorders on task more often	-Self-monitoring does not appear effective with emotionally disturbed student.

APPENDIX B

OBSERVER RECORDING SHEET

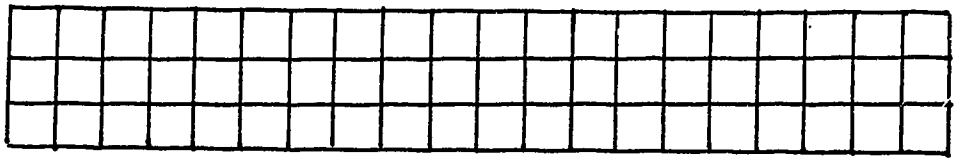
DATE_____

At any time during the 5 second interval was the student

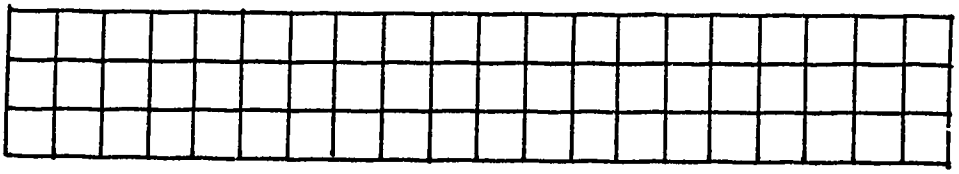
a) looking at the teacher when appropriate (e.g. during a demonstration or lecture)
b) looking at relevant material on the blackboard
c) talking with the teacher
d) reading relevant material
e) working on the assignment
f) having a hand raised or seeking teacher assistance

On-task behavior = + Off-task behavior = O

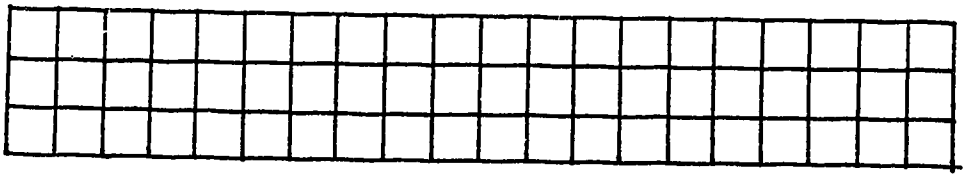
STUDENT 1



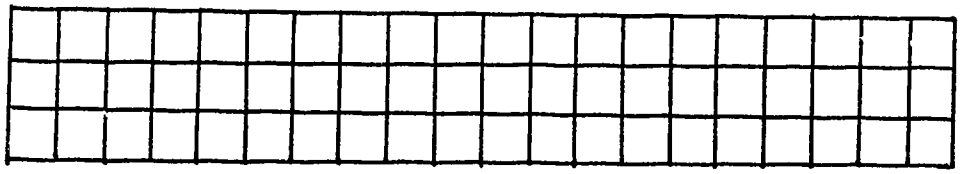
STUDENT 2



STUDENT 3



STUDENT 4



APPENDIX C

STUDENT SELF-RECORDING SHEET

STUDENT NO._____

DATE_____

At the time of the tone were you

a) looking at the teacher when appropriate (e.g. during a demonstration or lecture)
b) looking at relevant material on the blackboard (e.g. notes, instructions or page numbers)
c) talking with the teacher
d) reading assingned work
e) working on the assignment
f) sitting with your hand raised or waiting for the teacher to help you

On-task behavior = + Off-task behavior = O

TONE 1 ☐
TONE 2 ☐
TONE 3 ☐
TONE 4 ☐
TONE 5 ☐
TONE 6 ☐
TONE 7 ☐
TONE 8 ☐
TONE 9 ☐
TONE 10 ☐

OTHER CHECKS