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# Self-Recording and On-Task Behaviour of Students with Behaviour Disorders

by

Patricia Jane Gateman



A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled Self-Recording and On-Task Behaviour of Students with Behaviour Disorders submitted by Patricia Jane Gateman in partial fulfilment of the requirements for the degree of Master of Education.

David Baine

Helen Madill

Linda McDonald

Date August 26, 1992

## Dedication

To my parents, Jim and Kenny Lanskail, who provided me with the opportunities and the desire for a higher education, and who always expected my best effort.

## ABSTRACT

The purpose of the study was to compare the effects of self-recording of on-task and off-task target behaviours on student on-task performance. The experimental subjects were six students, ages 12 to 14, identified as having behaviour disorders. The effects of self-recording of classroom behaviours were evaluated during two phases. During one phase, the students recorded whether or not they were on-task; during the other phase, they recorded whether or not they were off-task. Momentary time-sampling was used for recording the occurrence or non-occurrence of behaviour. Each student was taught to record his or her on- or off-task behaviour at the moment an audible cue was sounded. The students recorded their on- and off-task behaviours while an independent observer assessed the impact of self-recording on the students' on-task classroom behaviours.

Data was compiled from videotapes recorded during the baseline and self-monitoring phases. The relationship between the reliability of each student's self-monitoring and the effects of self-recording on on-task behaviour was also studied. Reliability was assessed by comparing the students' records and the observers' records and calculating a reliability coefficient. The experimental design was an A-B-C-A MODEL with a counterbalance across

subjects to control for order effects. Because of the uncooperative nature of these students, money was selected as the reinforcement to motivate them to complete the self-recording sheets.

The results indicated a relationship between self-recording and increased on-task behaviour. During treatment, all students demonstrated an improvement in on-task behaviour compared to the baseline phase. The greatest increase in on-task behaviour occurred during the second phase of intervention, regardless of whether the students were monitoring on- or off-task behaviour. Student reliability was greatest during the first phase of the self-monitoring intervention regardless of whether off-or on-task behaviour was recorded. Anecdotal data indicated that the students preferred to collect data on on-task behaviour.

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# INTRODUCTION

Self-monitoring techniques have been proposed as an aid to achieving improvements in behaviour and as a means of increasing the likelihood that improved behaviour will generalize to other settings and continue when formal programmes have been discontinued. The terms self-monitoring and self-recording are used interchangeably throughout the paper.

Behaviour management is a continuing concern in the education of students having behaviour disorders. Such concern is warranted since severe behaviour disorders may cause interference with learning (Osborne, Kiburz & Miller, 1986). Students with behaviour disorders are often plagued by short attention spans or, more specifically, erratic on-task behaviour (Blick & Test, 1987). Traditionally, behaviour management has involved external control by parents and teachers. This approach to behaviour management places the child in the role of a passive recipient of treatment (Kneedler & Hallahan, 1981).

Often behaviour modification techniques have been initiated by teachers to regulate children's behaviours. Polsgrove and Mosley (1976) viewed traditional behaviour management approaches as

focusing on behavioural control rather than on behavioural change, a child's behaviour remains dependent on external feedback such as nagging, low grades, and expulsions. When the external control is absent, the student often reverts to misbehaviour.

More recently, research has demonstrated the success of student directed behavioural management through techniques of self-control (Baer, 1984; Morrow & Presswood, 1984; Rutherford, Howell & Rueda, 1982). Self-monitoring of one's own behaviour is also a means of mediating generalization of behaviour change (Kiburz, Miller & Morrow, 1985) - the ultimate goal of education. Additionally, self-monitoring of classroom behaviours has been shown to increase academic productivity (McLaughlin, Krappman & Welsh, 1985).

Self-control is defined as the ability to direct and govern one's behaviour appropriately in the absence of external guidance or contingencies (Morrow & Presswood, 1984). Self-monitoring, involving self-recording, has been used to teach adolescents how to manage and improve their own behaviours. By self-monitoring, an individual assesses whether or not a target behaviour has occurred and self-records the event. Individuals are responsible for systematically monitoring and recording their performances of certain behaviours. Through the process of self-monitoring and

self-recording, a child participates actively in the treatment process.

Although some research indicates that self-management techniques are not more effective than externally imposed reward systems (Rosenbaum & Drabman, 1979), external reward systems consume teaching time. Self-management techniques transfer the locus of control to the student thereby encouraging the student to become a more responsible component of the educational process. When students use self-management, the teacher is free to offer more instruction and assume the role of an ally (Polsgrove & Mosley, 1976). Children control their own academic and social behaviour, leaving teachers more time to devote to teaching. The teacher becomes a facilitator of self-control and not an agent of external control.

This study investigated the use of student self-monitoring procedures, with students experiencing behavioural disorders, to determine the effects of these monitoring procedures on the students' on-task performance. In two experimental phases, the students recorded either on-task or off-task behaviours. Due to the defiant and uncooperative nature of the subjects involved in the study, money was used to motivate the students to complete the self-recording sheets. Money was paid to each student for each

completed self-recording sheet. Through videotape recordings, an observer recorded the students' on-task behaviours. Reliability of the student self-recording was calculated during both phases of the study to determine the accuracy of student self-recording.

# LITERATURE REVIEW

## Self-monitoring

Self-monitoring, a combination of self-assessment and self-recording (Nelson, 1977), requires a student to make a judgment as to whether a behaviour has occurred and, if so, to record its occurrence. Self-monitoring has been applied in diverse settings and with a variety of behaviours. These applications have involved disparate populations, such as adults, children, adolescents, college students, and institutionalized individuals. The early use of self-monitoring as a therapeutic tool was primarily with adult clients (Morris & Kratochwill, 1983). The use of self-monitoring procedures was a way of keeping data on clients between therapeutic sessions. For example, rather than asking the client to recall how many cigarettes he or she had smoked or how many calories he or she had ingested, the therapist could be presented with daily logs that the client had kept since the last session. Eventually, researchers and clinicians began to use the procedures with children as well as adults. A number of researchers have found self-monitoring to be a useful technique for a variety of school-related behaviour problems. Increases have been noted in paying attention (Broden, Hall, & Mitts,

1974; Kneedler & Hallahan, 1981) and academic responses (Rundert & Bucher, 1978; McLaughlin, 1983). The use of the self-monitoring procedure has decreased talking-out in class (Broden et al., 1971), out-of-seat behaviour (Sugai & Rowe, 1984) and other disruptive behaviour (Stevenson & Fantuzzo, 1984). The following discussion focusses on research related to the use of self-monitoring with inattentive children and children with behaviour disorders.

Self-awareness

Self-monitoring and recording may lead to increased self-awareness and behavioural change. Kendall (1984) suggested that self-awareness results from cognitive-behavioural intervention. Such an intervention combines cognitive and behavioural training and enables students to become actively involved in the teaching-learning process. Self-monitoring promotes self-awareness of behaviour problems through the involvement of an individual's cognitive processes. "The act of committing one's judgement about one's performance to a recording sheet requires careful evaluation of one's own performance, and when they make public record of their judgements, they are less able to deceive anyone about their performance" (Lloyd, Hallahan, Kosiewicz & Kneedler, 1982, p. 224). Most types of cognitive-behavioural intervention have focused on the training of thinking processes in order to modify childrens'

techniques are perhaps the most typical, they are not the only cognitive-behavioural therapies used with children. Self-monitoring and self-recording are two cognitive-behavioural therapies focussed upon in this paper.

Generalization

Gelfand (1982) stated that self-awareness is the first step in self-directed change. Kelly, Salzberg, Levy, Warrenteltz, Adams, Crouse and Beegle (1984) believed that self-monitoring may help people acquire the skills necessary to examine their own behaviour and enable them to adjust it. The social skills training programme of Kelly et al. (1984) involved four adolescents attending vocational classes in a residential treatment programme for youths with behaviour disorders. An intervention procedure, consisting of verbal training and role-playing, was introduced resulting in rapid acquisition of appropriate responses to a supervisor's instructions. The targetted behaviour for intervention was students' responses to instructions given by a vocational teacher during generalization probes. In the generalization setting, the teacher gave instructions that were direct commands requiring physical compliance that could be easily accomplished. Examples included: "Start cleaning up," "Set the table for five people," and "Go get the oil filter wrench." A

student response was also considered appropriate if it consisted of a polite request for clarification, as long as the student began to carry-out the instruction within 5 seconds after receiving clarification (Kelly et al., 1984). The behaviour change did not generalize beyond the intervention site until the addition of a self-monitoring intervention phase.

Kiburz, Miller and Morrow (1985) also used self-monitoring intervention to facilitate transfer of training by an 18 year old institutionalized adolescent with behaviour disorders. The social skills instruction occurred in a classroom that served five other adolescents with serious behaviour disorders. Generalization probes took place in three settings: (a) the route the student walked to the classroom, (b) the student lounge located near the classroom, and (c) a vocational setting located within walking distance of the classroom. Following the training of greeting, thanking, and conversation skills, the subject was taught the skill of self-monitoring these social skills. Next, self-monitoring with reinforcement was implemented, followed again by self-monitoring alone and then a return to baseline conditions. The student's improvement in performance generalized the greatest amount when self-monitoring was paired with reinforcement. When the point system was withdrawn and self-monitoring alone was utilized, the

student's improvements in performance maintained a higher rate than during the baseline data collection period.

Although skill acquisition is the first phase in skill development, maintenance and generalization of the skill must ensue so that special needs students can function in society. In the foregoing study, reported by Kiburz et al., (1985), generalization was most successful when the self-monitoring procedure was paired with reinforcement. The reinforcement contingency was added to the self-monitoring procedure based on a reinforcement survey that revealed that tangible reinforcers and social activities, such as going to a local restaurant, were the most reinforcing events. However, the utilization of self-monitoring, without any reinforcement, maintained a higher rate of generalization than occurred during the collection of baseline data.

Self-monitoring and Video-recording

A study undertaken by Osborne, Kiburz and Miller (1986) illustrated the efficacy of self-control techniques in reducing the incidence of self-injurious behaviour. The subject in the study was a 15-year-old male, classified as severely behaviour disordered by local school district criteria. Following baseline data collection, the intervention process was initiated. The use of videotape feedback as a means of self-assessment was so powerful that the

other components of self-control (self-recording and self-monitoring) were deemed unnecessary.

Kehle, Clark, Jenson and Wampold (1986) showed that the disruptive behaviours of four children with behaviour disorders were substantially reduced after viewing an 11 minute, edited videotape of themselves behaving in an appropriate manner; all disruptive behaviours were eliminated. The effectiveness of this self-observation procedure was tested in a self-contained, special education classroom of children exhibiting behaviour disorders.

Although self-assessment alone has been effective, other studies have reported that self-recording has been an important component for maintenance (Lloyd, Hallahan, Kosiewicz & Kneedler, 1982). Results of such research has suggested that self-assessment and self-monitoring utilizing videotape feedback may be viable alternatives for educators of students with behaviour difficulties. The procedure can be used with minimal teacher supervision time in any classroom which has access to videotape equipment.

Application of Self-recording to On-task Behaviour

Broden, Hall, and Mitts (1971) investigated the effectiveness of self-recording procedures to modify the behaviours of two junior high school students. In one experiment, self-recording was effective in increasing an appropriate on-task behaviour of an eighth

grade student. The improvement was maintained over a three week follow-up period even though self-recording had been discontinued. Another experiment indicated the effectiveness of self-recording in decreasing an inappropriate behaviour (talking-out) of an eighth grade student. Although talk-outs decreased when self-recording was in effect, they increased when self-recording was discontinued. When self-recording was reestablished in the final phase of the study, there was a slight, though not significant, decrease in talking-out when compared to the baseline condition.

Self-monitoring has been shown to promote academic productivity and on-task behaviour. Additionally, self-monitoring has the advantage of relatively easy implementation. A number of studies have investigated the use of self-monitoring to increase time on-task. The typical procedure has involved an audio-tape recorded with randomly presented tones (Hallahan & Sapona, 1983; Harris, 1986; Kneedler & Hallahan, 1981). The tone lasted about 2 seconds and was audible to both the subjects and the observer (Hallahan, Lloyd, Kosiewicz, Kauffman & Graves, 1979; Hallahan, Marshall & Lloyd, 1981; Lloyd et al., 1982). The subjects were trained by the classroom teacher to ask, "Was I engaged in the target behaviour?" at the sound of each tone. In response to the question, the subject recorded by checking a box for "yes" or "no". After

recording the response, the child returned to work until the next tone sounded.

In a recent study by Harris (1986), self-monitoring procedures resulted in a meaningful increase in on-task behaviour. Four children with learning disabilities (aged 9 years, 10 months to 10 years, 6 months) monitored their on-task behaviour and their academic productivity. Interventions were introduced via a counter-balanced multiple-baseline design. Results indicated a meaningful increase in on-task behaviour during both self-monitoring of attention and self-monitoring of productivity.

Similarly, McLaughlin (1983) found an increase in both on-task and academic performance when three students with behaviour disorders (ages 8 years, 6 months to 9 years, 4 months) self-recorded their own on-task behaviour. The effects of self-recording were evaluated in a multiple-baseline design across subject-matter areas. With the introduction of self-recording, each student's performance improved. An immediate increase in on-task behaviour was noted when self-recording was introduced in each of the three subject-matter areas. This effect was replicated across each student. The mean percent of on-task behaviour ranged from 77% to 98% following the introduction of self-recording. During the baseline condition, the mean percent of on-task responding ranged

from 33% to 62%.

In later research, McLaughlin, Krappman and Welsh (1985) examined the academic performance of special education students when self-recording was employed. The subjects were four, special education students (ages 10 years, 2 months to 12 years, 3 months) selected for the study on the basis of their low rates of on-task behaviour during academic instruction. With the introduction of self-recording, the percentage of intervals coded as on-task increased for all pupils. During the baseline condition, the mean percentage of intervals coded as on-task for the subjects ranged from 24% - 60%. However, during the self-recording intervention, the mean percentage of intervals coded as on-task for the subjects ranged from 76% - 95%.

Definitions of Off-task and On-task Behaviours

There have been several definitions of on-task and off-task behaviours cited in the literature. On-task behaviours have been defined as: a student looking at an assignment or at the teacher; sitting up straight; doing whatever the teacher asked the student to do; not talking without permission, and completing all assignments (Cohen, Polsgrove, Rieth & Heinen, 1981). On-task behaviours have been described as occurring when students were sitting in their seats, and looking at their assigned tasks (Hallahan, Marshall, &

Lloyd, 1981) or when the students were looking at the teacher or at the assignment being discussed (Lloyd, Hallahan, Kosiewicz & Kneedler, 1982).

In the Broden, Hall and Mitts study (1971), on-task behaviour was defined as attending to a teacher-assigned task such that when appropriate, the student would be facing the teacher, writing down lecture notes, facing a child who was responding to a teacher question, or reciting when called upon by the teacher. Off-task behaviours were exhibited when a subject was out of desk without permission, talking-out without being recognized by the teacher, facing the window, fingering non-academic objects or working on an assignment for another class.

Time-Sampling

Ideally, when collecting data for behavioural analysis, an observer would collect data continuously to obtain as much information as possible. However, given time constraints, it is usually not possible to collect data continuously. To reduce the time, expense and volume of data obtained from continuous observations of behaviour, special data sampling procedures have been developed. One such procedure is time-sampling. This observational method involves making a series of observations lasting only a short interval within a specified period of time. Two

standard, time-sampling methods are interval recording and momentary time-sampling.

Interval recording provides an estimate of the frequency and duration of behavioural responses across timed intervals by recording the occurrence or nonoccurrence of behaviours within such specified time intervals. Observation sessions are divided into smaller time intervals of equal size and the observer determines whether the target behaviour occurred at any point during the interval. Thus, a partial observation interval is positively scored if a targetted response occurs during any part of an observation interval (Harrop & Daniels, 1985) and a whole observation interval is positively scored if a targetted response occurs throughout the observation interval.

In contrast to interval recording, momentary time-sampling involves recording the occurrence or nonoccurrence of a target behaviour at the instant a time interval has ended. Regardless of the subject's behaviours during the interval, the behaviour is recorded as present or absent only at the instant the interval ends. Like the partial interval method, behaviour is recorded only once per interval and is reported as a percent of the number of observations made.

Although there have been concerns of underestimation of the frequency of behavioural responses resulting from the momentary

time-sampling procedure, reasons cited below suggest that the procedure is acceptable for the present study. For example, when examining the difference between the actual duration of in-seat behaviour and estimated in-seat behaviour duration of an adult subject, Powell, Martindale, Kulp, Martindale and Bauman (1977) reported that whole interval, time-sampling and partial interval time-sampling generally underestimated the actual duration of a behaviour. In the Powell et al. (1977) study, momentary time-sampling was the best data recording system if the intervals were short, such as less than 120 seconds.

Brulle and Repp (1984) reported that 10, 20 and 30 second momentary time-sample values were accurate both with respect to their absolute error in estimation and their ability to reflect the absence or presence of trend in various behaviours of a mildly handicapped, 10 year old child. In the Brulle and Repp study (1984), duration data were gathered by using an event recorder on five separate behaviours (reading; listening/participation; inappropriate non-disruptive; disruptive, and being absent) during a reading lesson. The duration of each behaviour was calculated by measuring the length of each episode of each behaviour and translating it into units of time. This permanent record on the event-recorder paper was then sampled using 10, 20, 30, 60, 120, and 240 second, momentary

time-sampling procedures. Although the smaller time sample values were comparatively accurate, the larger values of 60, 120 and 240 seconds were highly inaccurate in representing time series data, both with respect to their absolute error in estimation and their ability to represent the presence or absence of trends in the data.

Other researchers have agreed that momentary time-sampling is the preferred method of data collection. Suen and Ary (1986) reviewed numerous studies and concluded that partial interval scores systematically overestimated duration and underestimated frequency, whole interval scores systematically underestimated both duration and frequency, and although momentary time-sampling procedures did not yield useful frequency information, they did produce unbiased duration estimates.

However, Repp, Roberts, Slack, Repp, and Berkler (1976) reported that momentary time-sampling was inaccurate in assessing response rate when examining pseudobehaviours generated by electromechanical equipment. Data was produced by electromechancial equipment and stored on an event recorder. Although their research indicated that time-sampling did not provide data that properly represented events in the environment, the authors conceded that it had the advantage of ease in that the procedure did not require constant observation but only periodic

observation to assess whether the behaviour was or was not occurring. This advantage of ease is a very important variable when planning classroom-based studies.

Powell et al. (1977) reported that momentary time-sampling using intervals (e.g. 5, 10, 20, 60, 120, and 300 seconds) did not accurately predict the frequency of in-seat behaviour in their study. However, the smaller the interval, the smaller the error of measurement resulted. Similarly, Brulle and Repp (1984) urged investigators to use caution with time-sampling intervals of 60 or more seconds duration. However, Harrop and Daniels (1985) concluded that dwelling on the size of the sampling interval ignores the influence of behavioural parameters, such as longer duration behaviours and higher rate behaviours. Subsequent to testing randomly generated computer runs of pseudobehaviour varying in duration and rate they stated:

> Since duration and rate of behaviour together determine the overall proportion of time during which behaviour occurs, it follows that the accuracy of momentary time sampling will be a function of this proportion and not simply related to the size of the sampling interval as is implied by Brulle and Repp (Harrop & Daniels, 1985, p. 533).

Thus, the information available indicates that the accuracy of momentary time-sampling is a function of both the duration and rate of the behaviour being studied as well as the length of the intervals between each observation and recording. Brulle and Repp (1984) gathered data on a variety of behaviours of various frequencies and durations. The authors found that the interobservation and recording intervals of 10, 20 and 30 seconds provided relatively accurate information, while intervals of larger duration provided increasingly less accurate data. Similar results were observed by Powell et al., (1970). In an active classroom in which several students are involved in a variety of activities, and in which they exhibit a variety of behaviours, the cost-effectiveness of collecting momentary time-samples has an obvious advantage. The labour-intensive nature of continuous data collection makes the method prohibitive.

Self-recording Instruments

It is important that the self-monitoring procedures taught to the students are compatible with the environments in which the students are expected to use them. The choice of self-monitoring procedures is particularly important because if there is a mismatch between the procedures and the natural conditions of the environment, the success of training may be jeopardized (Kelly,

Salzberg, Levy, Warrenteltz, Adams, Crouse, & Beegle, 1984). When students are working at their desks, at academic activities, they are often using pen and paper. A pen and paper self-recording procedure is compatible with school environments. The compatibility of inscribing a response on a page and on-task and in-seat behaviour has led to successful application of the self-recording procedure (Broden, Hall & Mitts, 1971; Hallahan, Lloyd, Kosiewicz, Kauffman, & Graves, 1979; Harris, 1986; McLaughlin, 1983; McLaughlin, Krappman, & Welsh, 1985; McLaughlin, Burgess & Sackville-West, 1981). Students can record on their sheets the occurrence or nonoccurrence of their target behaviours. Such a procedure can be performed without disrupting other students. Furthermore, a piece of recording paper is not at all obtrusive in a classroom environment. The self-recording sheet can be placed on the desk beside, or underneath, the assignment upon which the subject is working.

Reactivity

Although there is not a general consensus on the relationship between the accuracy of self-recording and the success of the self-recording procedure, some researchers believe that the accuracy of a self-monitoring procedure does not make any difference to the intervention results (Morris & Kratochwill, 1983). An interesting

component of self-monitoring, which occurs whether or not the self-recording data is in agreement with the data recorded by the objective observer, is reactivity. Reactivity is the occurrence of behavioural change initiated by the procedure of self-monitoring (Cone & Hawkins, 1977). The mere act of observing one's self may influence the observed behaviour (Kazdin, 1974). Behaviour changes often occur when subjects begin to record whether or not they have been performing a given behaviour. In some cases, a subject's collection of data on a certain behaviour may have what is termed a reactive effect on the behaviour. Simply as a function of the self-recording process, the behaviour may change in the desired direction. In this capacity, self-recording functions as a behaviour-change technique (Rosenbaum & Drabman, 1979). Such changes - "reactive effects" - (Lloyd, Hallahan, Kosiewicz, & Kneedler, 1982) frequently are therapeutic.

Several studies (Broden et al., 1971; McLaughlin et al., 1985), reported that positive or negative value (valence) given to the target behaviours is one of the variables which determines the direction of the reactive changes. For example, positively evaluated behaviours tend to increase in frequency during self-recording while negatively evaluated behaviours tend to decrease. The finding that self-recording accuracy does not relate to the reactive effects of the

self-recording is in agreement with previous self-recording research (Nelson, 1977). Kanfer (1975) proposed that self-recorders may tend to avoid making a self-recording of undesirable target behaviours to minimize negative self-evaluation. Other studies have indicated that there is a relationship between increased on-task behaviour and accurate self-recording (Blick & Test, 1987; Hallahan & Sapona, 1983; Rhode, Morgan, & Young, 1983). Further research is necessary to determine the relationship between the two variables.

Conclusions

Self-recording of on- and off-task behaviour, using random interval tones on a tape-recorder signalling when to record, has resulted in increased on-task behaviour. According to some researchers, (Gelfand, 1982; Kendall, 1984), self-awareness precedes self-directed change. Participating in self-directed change removes the student from the role of a passive recipient of treatment (Kneedler & Hallahan, 1981). Self-monitoring procedures can be effectively employed during oral, small group instruction, and positive behavioural changes can be maintained over a period of time following the gradual fading of external, procedural components (Hallahan et al., 1981). There is not a consensus in the literature that students must be accurate in their assessment and recording of on-task behaviours in order to change these behaviours. Some

students have been in close agreement with external observers, but others have not. Self-recording procedures take a minimal amount of the teacher's time to implement. Furthermore, the procedure is minimally disruptive to other students in the classroom.

Teachers of students in the self-contained classroom of the present study were concerned about the amount of off-task behaviour exhibited by their students. Because of the apparent success of previous researchers, the self-recording procedure was implemented to determine the effect of the self-monitoring intervention with their students with behaviour disorders.

According to researchers (Gelfand, 1982; Kendall, 1984), self-awareness precedes self-directed change. It is therefore necessary to assist students to gain self-awareness. The current study planned to aid the students in gaining self-awareness by having the students self-record their behaviours during two intervention phases. It was expected that when the students were self-recording in the two phases of the study they would gain an increased awareness of their behaviour. Furthermore, before self-recording was initiated the students viewed videotaped episodes of selected classroom activities. Viewing themselves granted the students the opportunity to see examples of both their appropriate and inappropriate behaviours. This viewing of the videotaped recordings

provided training for the students participating in the study.

Initially there was a baseline phase, Phase A1 in which the teacher/researcher recorded the occurrence of the subjects' on-task behaviours. In Phase B of the study, at the sound of the tone, the subjects recorded if they were on-task, whereas in Phase C, at the tone, the subjects recorded if they were off-task.

The present study added self-monitoring as a complement to an ongoing programme in which students received points for acceptable behaviour. These points were useful in purchasing option classes, "Nintendo" time, and other tangible rewards such as "Slurpees" and chocolate bars. These external rewards were in effect before the current study was undertaken.

The self-recording procedure has been used effectively with adolescents with behaviour disorders. Its relative unobtrusiveness lends itself easily to being implemented in a self-contained classroom for students with behaviour disorders. Research has demonstrated the effect of self-recording on increasing positive behaviours and decreasing negative behaviours. A question requiring further research is, will there be a differential effect on reliability of recording and on the direction of on-task behaviour if a student self-records either on-task or off-task behaviour?

# CHAPTER III

## STATEMENT OF THE PROBLEM

### Problem

This study investigated implementation of self-monitoring procedures with children having behaviour disorders of a defiant and aggressive nature. Studies that have demonstrated the effectiveness of this technique have used students who were hyperactive or distractible rather than defiant and aggressive (Hallahan, Lloyd, & Stoller, 1982). The requirements for implementation suggest that the student must "buy into" the process, under the assumption that such self-responsibility will yield greater results (Bender & Evans, 1989). If students do not find increased achievement in school work or increased teacher praise to be sufficient rewards for participating in the self-monitoring procedure, they are not likely to be good candidates for such an intervention. Therefore, two broad questions of interest arise - will students with behaviour disorders of a defiant and aggressive nature comply with the self-monitoring procedure? Furthermore, will the improvement in on-task behaviour, which had been noted in other studies (Broden, Hall & Mitts, 1971; Harris, 1986; McLaughlin, 1983), be replicated in the current study?

Previous studies have demonstrated the effectiveness of self-monitoring and self-recording procedures in increasing positive behaviours and decreasing negative behaviours. The use of self-monitoring involves the students in the intervention procedure and in doing so encourages the students to become responsible for their behaviours.

One purpose of this study was to investigate the effects of self-recording on students' on-task behaviours when they were self-recording either on-task or off-task target behaviours. Another purpose of the study was to investigate the relationship between self-recording accuracy and on-task behaviour.

The specific objectives of the present study were to:

1) determine if self-recording is an effective intervention for increasing on-task behaviour of students experiencing behaviour disorders of an aggressive and defiant nature;

2) compare the differential effects on on-task behaviour of self-recording either on-task or off-task target behaviours, and

3) assess the reliability of self-recording to determine if there is a difference in student accuracy when recording on- and off-task behaviours.

Hypotheses:

Based on the literature in the area of self-monitoring

procedures with students, the following hypotheses were made.

Hypothesis 1. There will be an increase of on-task behaviours, from baseline conditions, when the students are self-recording their on-task behaviour.

Rationale. Research has shown that the direction of behaviour change produced by self-recording is often in a therapeutic direction (Broden et al., 1971; Lloyd, Hallahan, Kosiewicz, & Kneedler, 1982). Self-monitoring may increase those behaviours judged as positive by clients (Nelson, 1977).

Hypothesis 2. There will be an increase of on-task behaviours, from baseline conditions, when the students are recording off-task behaviours.

Rationale. Research has shown that the direction of behaviour change produced by self-recording a behaviour is often in a therapeutic direction (Broden et al., 1971; Lloyd et al., 1982). As the students gain an awareness of their behaviour, they may gain a sense of responsibility in improving their behaviour (Gelfand, 1982; Kelly, Salzberg, Levy, Warrenteltz, Adams, Crouse, & Beegle, 1984).

Hypothesis 3. The reliability of the students' self-recording will be lower during the phase of self-recording off-task behaviours than during the phase of recording on-task behaviours.

Rationale. Kanfer (1975) proposed that self-recorders may

tend to avoid making self-recording responses for undesirable target behaviours to minimize negative self-evaluation.

Hypothesis 4. On-task behaviour will show a greater improvement when the students are self-recording their on-task behaviours than when they are self-recording their off-task behaviours.

Rationale. Although there is not a consensus in the literature regarding the relationship between recording accuracy and the effectiveness of self-monitoring, studies have shown increases in attentive behaviour when accuracy was stressed (Hallahan & Sapona, 1983; Rhode, Morgan, & Young, 1983). Although accuracy was not stressed during the present study, it has been hypothesized that there may be less accuracy when the students are self-recording their off-task behaviours in order to minimize their negative self-evaluation. If this condition occurs, and if there is a positive relationship between recording accuracy and self-recording effectiveness then a greater improvement in on-task behaviour will occur during the on-task focus.

# CHAPTER IV

# METHOD

## Subjects

The subjects for the study were six students ranging in age from 12 to 14 years. The six students included five boys and one girl. These students had been placed in a self-contained classroom for assistance with their behavioural disorders because of severe behaviour problems exhibited in previous classrooms. Problems with these students included high rates of disruptive classroom behaviour, refusal to complete assigned tasks, frequent inappropriate talking in class, frequent out-of-seat occurrences, noncompliance with teacher requests, and aggression toward peers and teachers.

## Setting

The study was conducted in two, daily instructional periods, one in the morning and one in the afternoon. Each period consisted of 42 minutes. The special education, self-contained classroom was located in a regular, junior high school. The special classroom had been established to provide a protected, small group, educational programme for students who fit the criteria of behaviourally disordered to the extent that they could not benefit from a regular

classroom programme. The intent of the programme was to facilitate a modification of the students' behaviour patterns thereby enabling them to function in regular classrooms. Four of the six subjects were involved in some integration with regular education students within the school. A total of ten adolescents were enrolled in the programme with two, full-time teachers. The present study used self-monitoring as a complement to an ongoing behavioural treatment programme in which students received points for acceptable behaviour. These points could be used to purchase option classes, "Nintendo" time, and other tangible rewards such as "Slurpees" and chocolate bars. On-task and off-task behaviours were not the specific behaviours being targetted for the external reward programme. Behaviours such as successful integration with students in the regular classrooms and successful peer and teacher interactions as well as on-task behaviours were rewarded with external rewards. Therefore, the intervention phases were concurrent with a behaviour modification programme already in place.

Definitions

Due to the special needs of the students in this class, on-task behaviour was not strictly confined to the academic realm. The students had been placed in a self-contained classroom to improve

both their academic and their social skills. Thus, activities directed toward improvement of academic and/or social skills were considered on-task. Furthermore, since both skill areas were important to the students' educational development, the on-task definitions for this study encompassed behaviours from both domains. Behaviour, within any instructional context, leading toward either academic and/or social development were considered to be on-task. For example, although math may have been the academic task at hand, socially appropriate behaviour leading to the development of students' prosocial skills within a mathematic lesson were defined as on-task behaviour. Thus, off-task included any behaviours interfering with either the students' academic and/or social development. Conversely, on-task behaviours included those behaviours enhancing a student's academic and/or social development.

On-task behaviour. On-task behaviour included behaviours characterized by attentiveness to task-related and/or prosocial activities; for example, a student looking at the teacher when the teacher was talking or presenting information to the individual or to the class as a whole. Attending was characterized by head and body orientation in the direction of the task-related activity. Thus, the student may have been looking at materials in the classroom that

related to the assignment, or looking at a peer who was providing task-related or prosocial information to the class, in the absence of a "get back to work" command from the teacher. If the teacher joined in the conversation, implicit consent to engage in conversational skill development was granted. On-task behaviour included looking at the person speaking or looking at the classroom object or activity related to the students' assignments. For example, students may have needed to reference books, maps or pictures related to their assignments. Reading assigned materials and looking at their assigned worksheet demonstrated that the students were on-task. Furthermore, working with a pen or pencil while seated at a desk or table was defined as on-task; whether the student was thought to be doodling or working on assigned academic work was not important in this context, because for the students in this classroom, simply sitting at a desk, pencil in hand, was considered to be an appropriate behaviour. On-task behaviour included getting materials from within their desks, their cubbies or from other classroom areas where reference materials or scissors and pencils or markers were stored. Therefore, walking within the room was defined as on-task if a student was on a task-related mission and was not disruptive to the other students. On-task responses were characterized by nonverbal behaviour, or verbal

behaviour if the student engaged the teacher in any discussion which did not include yelling, swearing or name-calling of the teacher or other students. On-task behaviour occurred if a classroom discussion ensued, providing the students were on-topic with the teacher. On-topic referred to asking questions, or making comments related to the academic task or joining in a teacher approved discussion. Teacher approval may have been implicit e.g., not cuing the student to return to the assignment or explicit e.g., asking the student for his or her input into the discussion.

Off-task behaviour. Off-task behaviour included behaviours that were disruptive and were non-attentive to either the assigned academic task or to any prosocial skill development. Off-task was defined as behaviour that interfered with academic and/or social development of self and/or others. For example, name-calling, and other put-downs, swearing and yelling were considered off-task activities for social development. Disruptive activities such as using a pen or pencil for other than writing or drawing activities, throwing objects around the room or at other students were considered to be off-task activities. Physical aggression towards peers, teachers and/or objects, such as desks and books, were considered to be off-task. If the teacher was engaged in a conversation with a student regarding an individual assignment and

another student interrupted this learning process, off-task behaviour was recorded as having occurred. Interruptions included singing or calling when the teacher was engaged in a one-on-one tutorial session with another student and the teacher had to stop the teaching session to deal with the disruption. Off-task behaviour occurred when the teacher directed the students to their assignment and they disregarded the cue, for example, if the students continued discussing an issue in which the teacher had been engaged but discontinued by directing the students back to their assigned task. Non-compliant, defiant behaviour was defined as off-task. Another indication of off-task behaviour was a student wandering about the room on a mission that was not task-related. However, as mentioned earlier, getting an atlas, dictionary or other reference material or getting up to sharpen a pencil, get a pencil, scissors or felt markers was defined as task-related. If, however, on the way to the pencil sharpener the student caused a disruption, for example, knocking a fellow student's books on the floor or stating a put-down or similarly negative comment, the actions were considered to be off-task.

Experimental Design

The experimental design was a single subject, research design used to compare the effects of different experimental conditions on

the same individual. Two intervention phases were compared and replications were conducted with different students. The order of the interventions were counterbalanced across the students to control for order effects. Baseline data were collected and recorded indicating the students' percentage of on-task behaviour before the intervention phases were started. This baseline phase was labelled Phase A1. The teacher/researcher collected baseline data in each class for twenty-two days. A lengthy baseline was used in an attempt to obtain stable baseline data.

When the baseline data had been collected, three students began self-recording their on-task behaviours. This intervention phase, in which on-task behaviours were self-recorded, was labelled Phase B. Simultaneously, three students began self-recording their off-task behaviours. This phase, in which off-task behaviours were recorded, was labelled Phase C. Because of the length of the initial baseline, the first phase in which the students were engaged was extended to twelve sessions to coincide with the lengthiness of the baseline. Following the twelfth session, the students switched phases. The students who had commenced Phase B now switched to self-recording their off-task behaviours in Phase C. Conversely, those students, who had begun the intervention by self-recording off-task behaviours in Phase C, switched to Phase B in which they

self-recorded their on-task behaviours. This counterbalance of interventions was introduced to control for any order effects. The students participated in the second phase of intervention for twelve sessions to equalize the duration of the data collection. Upon completion of the second phase of intervention, return to baseline conditions (Phase A2) occurred. The video camera recorded the students' performances during all phases of the study.

Procedure

All students in the classroom were videotaped daily during various classroom activities. The videotape equipment, requiring little teacher attention, was set up in a fixed position in the classroom. The advantages of videotape use included: (a) the small amount of teacher time required, (b) the cost-efficiency of being able to record behaviour without the presence of trained observers in the room, and (c) the accuracy of the behaviour due to the continuous record of the videotape (Osborne, Kiburz, & Miller, 1986).

Relative ease of implementation was a factor to consider when planning the research strategy of self-monitoring with adolescents experiencing behaviour disorders. School settings, including the specialized classroom where the present study was conducted, do not have the resources for continuous recording of behaviours. Thus, videotaping of the two daily self-recording sessions provided the

observer and an independent observer with continuous access to the subjects' behaviours. Video data of the students' classroom behaviours were collected before the intervention procedure was initiated. This data was used for training purposes before self-monitoring of the target behaviours began. Videotaping classroom activities also provided baseline data. The video camera had been used in the classroom daily for four months before the study began which allowed the subjects to adapt to the observation device before the formal data collections were started. Subsequent viewing of these videotapes enabled the students to see examples of both their appropriate on-task behaviours and their inappropriate off-task behaviours. This viewing of the videotaped recordings provided training for the subjects participating in the study.

During the self-monitoring intervention in this study, the subjects were paid $0.50 (fifty cents) for each completed data sheet. This reinforcement schedule was implemented to motivate the students to collect data. It was the belief of the teacher/researcher that, unless such motivation was awarded to the students, they would not complete the self-recording sheets.

Student data collection. It was not feasible to have the students continuously self-record their behaviours. Therefore, during the self-recording phases, tape-recorded audio signals were

used to cue the students to record their on- or off-task behaviours. The signals for the self-recording were programmed to occur every 2 minutes on the average but on a variable interval schedule so that the recording points would not be readily predictable. If the duration of the intervals was predictable, the students may have changed their behaviours in anticipation of the signal. The students self-recorded to measure its effect on their on-task behaviour. A random, on-average 2 minute recording interval was selected for the tones cuing self-recording.

An audio-tape was used to cue self-recording. The tape recorder was placed within hearing distance and the students were instructed to ask themselves whether they were involved in the target behaviour when each tone was emitted. The tones were emitted on an average of 2 minutes with a range of 1 - 3 minutes. Anything less than 1 minute was thought to be too disruptive to the teaching and learning process and anything more than 3 minutes would inhibit the amount of data collected. The tones were chosen randomly using a random numbers table.

It is important to recall that according to previously cited research literature (e.g., Brulle & Repp, 1984; Powell, 1977), momentary time-sampling, having interobservation and recording intervals averaging 2 minutes (range 1 - 3) minutes), do not

generally provide representation of the frequency or duration of behaviour. These momentary time-sampling intervals were chosen in the present study because it was thought that they would effectively remind students sufficiently often to monitor and, if necessary, modify their on-task behaviours, without being so frequent as to interfere with the teaching and learning process. Because the data collected by the students may have been affected by both the reliability of the student recording and the reliability of the momentary time-sampling procedure, the data was not used to assess the effectiveness of the treatment. The student data was, however, compared with data collected by the teacher/researcher to assess the reliability of the data collected by the students during the two treatment phases of the study.

Student training. The sequence used for presenting the treatment followed the steps recommended by Mahoney (1978). In introducing the self-monitoring procedure, the teacher defined clearly what was meant by on-task and off-task behaviour, while having the subjects view some videotaped episodes of classroom experiences in which both types of behaviours were exhibited. The teacher also instructed the students as to how to use the recording sheet, modeled what to do when using the tape recorder and the recording sheet, and asked the students to repeat the definitions and

instructions (Mahoney, 1978). Daily recording sheets were distributed and placed on each student's desk. Depending upon in which self-recording phase the subjects were engaged, the self-recording sheets were boldly labelled as either on-task or off-task (see Appendix 1). Furthermore, a detailed description of on-task behaviours and off-task behaviours was posted in a prominent position in the classroom (see Appendix 2).

Treatment phases. Following the baseline phase (Phase A1), three students commenced Phase B, self-recording their on-task behaviours at the sound of the tone. During this phase, the students were directed to ask themselves "Was I on-task?" at the sound of the tone. At the same time, three other students began Phase C, self-recording if they were off-task at the sound of the tone. During this phase, the students were directed to ask "Was I off-task?" at the sound of the tone.

Data Collection

Data collection occurred 5 days each week with the exception of holidays, teacher's convention, one day of teacher absence and one day of room closure. The data were collected each day during two 42 minute periods: Period 3 in the morning and Period 5 in the afternoon. There were 5 class periods each day. The video camera recorded the behaviour of all of the students as they were engaged in

their daily activities during Periods 3 and 5. Periods 3 and 5 were chosen for data collection because Period 2 was the students' first class and often the students came in late, and during Period 4, a Physical Education class occurred and the students were out of the classroom. Period 5 was considered the most convenient time for data collection in the afternoon because Period 6 was often an option class and the students were out of the classroom.

Thus, during all phases of the study, the video-camera provided a continuous record of student performance during two, 42 minute periods of each day. During each period, the students were prompted by an audio-signal (average duration between signals: 2 minutes; range 1 to 3 minutes) to take a momentary time-sample of either their on- or off-task behaviour. It is important to note that this data, which may have been affected by both the reliability of the student recording and the reliability of the momentary time-sampling procedure, was not used to evaluate the effectiveness of the treatment. As described below, the data was used only to assess the reliability of student data collection and to cue the students to self-record.

At the end of each day, the teacher/researcher reviewed the videotapes. For each period, two, five minute random samples of student performance were observed and recorded. During these

observations, momentary time-samples were made of on- and off-task behaviour every 20 seconds. According to Brulle and Repp (1984), 10 - 20 second time-sampling procedures are relatively accurate. The 20 second interval was chosen rather than the 10 second interval because of the number of students being observed. To observe and record the variety of behaviours exhibited by six students at 10 second intervals would have been very difficult and, therefore, relatively unreliable.

In addition to the two, five minute samples, two, ten minute random samples of student performance was observed and recorded. Each time the audio-signal sounded, the teacher/researcher recorded whether each student was on- or off-task (see the data recording form in Appendix 4). This information, when compared to the data the students recorded, was used to evaluate the reliability of student data recording during the treatment phases of the study.

Data Analysis

Interobserver reliability. Interobserver reliability was assessed during both baseline sessions and both intervention phases. A certified teacher received training in the observation and recording of the subjects' on- and off-task behaviours. The sessions were assessed by viewing the same classroom samples of behaviour and recording the subjects' on- and off-task behaviours following

the same 20 second momentary time-sampling intervals used by the teacher/researcher. Interobserver reliability was calculated in terms of percentage agreement on occurrences of on-task and off-task behaviours. The formula used for the reliability coefficient was:

$$R = \frac{A}{A+B} \times 100$$

where "R" is the index of reliability expressed in terms of a percentage; "A" is the number of intervals where both observers agreed as to whether or not the student was on-task or off-task at the moment each observation interval terminated; and "B" is the number of intervals in which the two observers disagreed. Interobserver reliability was also assessed for the two 10 minute samples of observing the students' self-recording.

Teacher/researcher and student reliability. As previously mentioned, the reliability between the teacher/researcher and the students was assessed during both intervention phases. The sessions were assessed by observing the two 10 minute samples of video recordings and noting whether the students were on- or off-task at the tone used to cue them to self-record their behaviours.

Percentage of on-task behaviour. Data was gathered by the teacher/researcher on each student's on-task performance. The data gathered provided the information to enable the researcher to

compare the interventions with the baseline and with the adjacent intervention.

The data were reported in percentages to make comparable the students' unequal opportunities to respond across the sessions. Percentage data provided a simple way of summarizing overall performance for analysis on a graph.

The data was analyzed using visual analysis methods. The visual analysis of graphic data, in contrast to the statistical analysis of data, is often used for behaviour analysis. Visual analysis is an approach which has proven to be both practical and reliable, and therefore it has been adopted by educators and clinicians, as well as researchers, to evaluate data patterns (Tawney & Gast, 1984).

In this study, the use of visual analysis allowed a comparison of a student's behaviour before and after the implementation of the self-monitoring phases. In addition, a comparison of the adjacent self-monitoring interventions, Phases B and C, was performed. Graphical representation of the data, provided the researcher with a compact, and detailed summary of the students' performances. The graphs communicated each subject's sequence of experimental conditions, the time spent in each intervention phase, the independent and dependent variables, the experimental design and

the relationship between variables (Tawney & Gast, 1984).

Several aspects of the data plots were evaluated. Within each phase several aspects of the data were examined: (a) the levels of performance in the phases, (b) the trends in performance and (c) the variability of the data. When inspecting data, within phases, two basic aspects of level of performance were evaluated: a) level stability and b) level change. Level stability was determined by assessing the amount of variability, or range of data point values in a series. When the range of values was small, there was an indication of low variability, and the data were said to be stable. The second aspect of level considered was the amount of change in level within the same condition or phase. The absolute level change within a condition is computed by (a) identifying the ordinate values of the first and last data points of a condition, (b) subtracting the smallest from the largest, and (c) noting whether the change in level within the condition is in a therapeutic (improving) or countertherapeutic (decaying) direction (Tawney & Gast, 1984).

The visual analysis of data within a condition is concerned primarily with the stability of the data (Tawney & Gast, 1984). Ideally, the data should show low variability in order to provide a convincing demonstration of experimental control during the subsequent condition. Variability of data refers to fluctuations in

the student's performance. "As a general rule, the greater the variability in the data, the more difficult it is to draw conclusions about the effects of the intervention" (Kazdin, 1982, p. 109). However, in classrooms, unlike laboratories, variability is unavoidable and in such settings it is seldom possible to eliminate variability. When examining the variability of the students' data in the current study, a parameter of 20% variability was allowed as suggested by Repp (1983). Variability, for each phase, was calculated by determining the average performance, of each student, and then determining the value of 20% of this average. Once an acceptable range of data points was determined, stability was assessed by determining that 80% of the data points fell within the 20% criterion envelope from the mean.

The split-middle method was used to plot data trend lines. (Tawney & Gast, 1984). Drawing a trend line for each condition facilitated the analysis of the experimental effect. An ascending line denoted an increasing trend or an improvement in the student's on-task behaviour, whereas a descending line of progress demonstrated a decreasing direction or trend in the on-task performance. In addition to determining the direction of a trend, it was also important to determine trend stability (Tawney & Gast, 1984). Trend stability was evaluated by determining how many of

the data points of a condition fell within a predetermined range along the trend line. This predetermined range was 20% as outlined by Repp (1983).

As well as a within phase analysis, a between phases analysis was conducted. Evaluation of changes in means focussed on the change in the average rate of student performance across each phase. Visual inspection of the relationship of these means was used to determine if the self-recording intervention resulted in consistent improvement in the students' on-task behaviour.

Variability between phases was examined in order to determine whether the experimental control provided a convincing demonstration of the effects of the self-recording procedure. Evidence of control existed when the baseline and treatment data were both stable. Another property of level, the level change between adjacent conditions, received attention. The absolute change in level between two adjacent conditions was computed by (a) identifying the ordinate values of the last data point of the first condition and the first data point value of the second condition; (b) subtracting the smallest value from the largest; and (c) noting whether the change in level was in an improving or decaying direction. This information indicated the immediate strength or impact the self-recording intervention had on a student's on-task

performance. When there was a large change in level which occurred immediately within the new condition, the level change was considered abrupt, and indicative of a "powerful" or effective intervention.

The overlap between scores of adjacent phases was also examined. Percentage of overlap of scores in adjacent phases was calculated by (a) determining the range of data point values of the first condition, (b) counting the number of data points plotted in the second condition, (c) counting the number of data points of the second condition which fell within the range of values of the first condition, and (d) dividing the number of data points which fell within the range of the first condition by the total number of data points of the second condition and multiplying this number by 100. This process yielded the percentage of overlap between the two conditions. The less overlap in the range of the data points of two adjacent conditions, the more convincing the demonstration that the intervention was responsible for the experimental effect (Tawney & Gast, 1984).

A comparison of the differences in the trend lines drawn across two adjacent conditions, provided the researcher with the information to determine the effect self-recording had on the students' on-task performance. Changes in trend were expressed as

"ascending or descending". These analyses are graphically presented and discussed in the Results chapter.

# CHAPTER V

# RESULTS

## Interobserver Reliability

Interobserver reliability was provided by the second teacher in the classroom who reviewed the daily videotapes and recorded the students' on-task and off-task behaviours. The average overall interobserver reliability, calculated on the data collected during the 20 second momentary time-sampling intervals, for the baseline data was 80% (56%-92%); for the first and second phases of intervention reliability was 100% and 99% (96%-100%); respectively, and during the return to baseline conditions, the reliability was at 89% (80%-93%). Subject 5 was only in view of the camera for one interobserver reliability session. See Table 1 for Interobserver Reliability results on the data collected during the 20 second momentary time-sampling intervals. Interobserver reliability was also assessed between the teacher/researcher's record of the students' behaviours at the tone cuing them to self-record and the second teacher's record of the students' behaviour at the same tone. During the first intervention phase, the interobserver reliability at the sound of the self-recording tones was 100%, whereas in the second phase of intervention, the reliability was assessed at 92%

Table 1

Interobserver Reliability: 20 second Momentary Time-Sampling

| | | Intervention | | |
|---|---|---|---|---|
| Subjects | Baseline A1 | Phase One | Phase Two | Baseline A2 |
| 1 | 80% | 100%(C) | 100%(B) | - |
| 2 | 92% | 100%(B) | 100%(C) | 93% |
| 3 | 75% | 100%(C) | 96%(B) | - |
| 4 | 83% | 100%(B) | 100%(C) | 93% |
| 5 | *56% | 100%(C) | - (B) | - |
| 6 | 92% | 100%(B) | 100%(C) | 80% |
| Average | 80% | 100% | 99% | 89% |

*Only one session was assessed

(C) - Self-recording off-task behaviours

(B) - Self-recording on-task behaviours

(67%-100%). See Table 2 for the Interobserver Reliability related to the audio-recording tone.

In general, applied behaviour analysts aim for a reliability coefficient of around .90. Anything less than .80 is a signal that something is wrong (Alberto & Troutman, 1986). The level of agreement that is acceptable is one that demonstrates that the interobserver is sufficiently consistent with the teacher/researcher. During the initial baseline phase, there was low reliability for Subject 5 (reliability 56%). This was attributed to the fact that this student was not within the range of the camera on the days when reliability was calculated. In fact, only one session was assessed for reliability. Reliability for Subjects 1 (80%) and 3 (75%), during the initial baseline phase, did not meet the criterion of 90 percent as outlined by Alberto and Troutman, 1986. It was suspected that the training and experience of the observer was initially inaccurate because reliability improved during later sessions.

Reliability of the Data Recorded by the Students

Reliability measures of the student data recordings during the self-recording phases were obtained by viewing the videotape recordings and assessing the agreement between the teacher/researcher and the students. Table 3 summarizes the

Table 2

Interobserver Reliability: Self-Recording Tones

| Subjects | Intervention | |
|---|---|---|
| | Phase One | Phase Two |
| 1 | 100%(C) | 100%(B) |
| 2 | 100%(B) | 100%(C) |
| 3 | 100%(C) | 100%(B) |
| 4 | 100%(B) | - (C) |
| 5 | 100%(C) | - (B) |
| 6 | 100%(B) | *67%(C) |
| Average | 100% | 92% |

*Only one session was assessed

(C) Self-recording off-task behaviours

(B) Self-recording on-task behaviours

Table 3

Percent Agreement (reliability) Between Students and Teacher/Researcher Data Recording

| | Intervention | | | |
|---|---|---|---|---|
| | Intervention Phase One | | Intervention Phase Two | |
| Subjects | Recording On-task | Recording Off-task | Recording On-task | Recording Off-task |
| 1 | | 71% | 62% | |
| 2 | 74% | | | 72% |
| 3 | | 65% | 62% | |
| 4 | 75% | | | 66% |
| 5 | | 75% | | |
| 6 | 91% | | | 88% |
| Average | 80% | 70% | 62% | 75% |

Average/Phase One: 75% Two: 70%

findings from these reliability calculations. During phase one, in which the students recorded either on- or off-task behaviour, the reliabilities ranged from 65%-91%, with an average of 75%. During phase two, the reliabilities ranged from 62%-88% with an average of 70%.

Reliability measures ranged from 62%-91% during the phase in which the subjects recorded their on-task behaviours. The average reliability for this phase was 73%. During the self-recording of off-task behaviours, reliability measures ranged from 65%-88%. The average measure of reliability for recording off-task behaviours was 73%.

Data Analysis Per Subject

Subject 1 (Figure 1)

Data trends and stability. Across each phase of the data shown in Figure 1, sloping, straight lines have been drawn to indicate the trend of the data within each respective phase. On either side of these lines, parallel, dotted lines have been drawn to indicate a 20% criterion envelope recommended by Repp (1983). This 20% envelope was plotted by determining 20% of the highest data point value within the data series in each phase. For example, the highest data point value during the first baseline period in Figure 1 is 80%; 20% of this value is 16. Thus, the criterion envelope has been plotted an

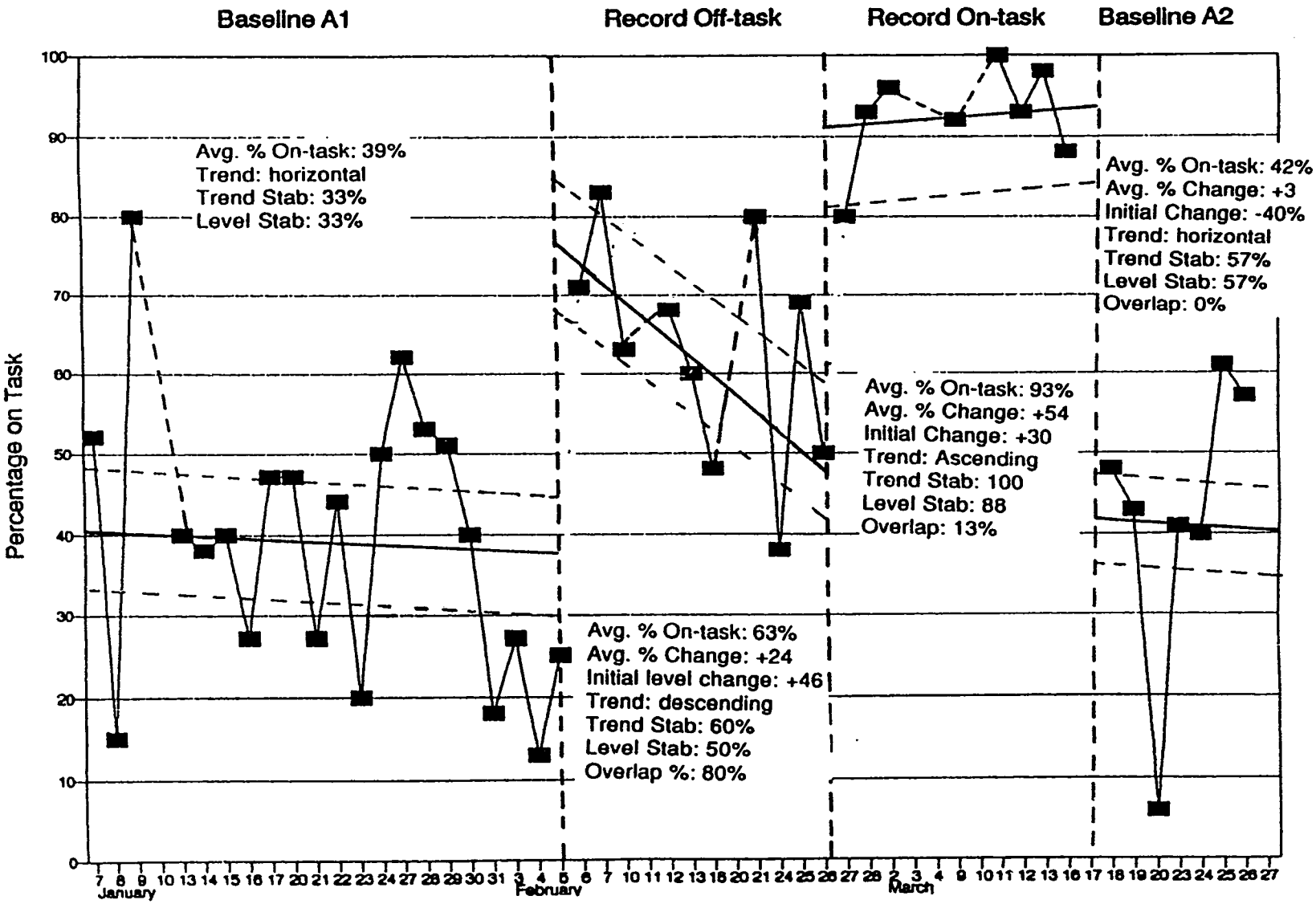


Figure 1: Subject 1 Percentage on Task

average of 8 points above and below the trend line. Then, the percent of data points falling within the respective criterion envelopes in each phase was calculated. For example, in the first baseline phase of Figure 1, 33% of the data points fell within the envelope. Thus, 33% is a measure of the trend stability during the first baseline period. Thirty-three percent is considered to be quite unstable. Trend stability increased during the recording of off-task behaviour to 60%; 100% trend stability was achieved during the recording of on-task behaviour, but fell to 57% during the second baseline period. To facilitate analysis of the data within and between phases, and to avoid the problem of shifting reader attention to figures and tables on different pages, a summary of the analysis of each phase has been incorporated into each figure. Within each synopsis, the average percentage of change refers to the change from the baseline level. The other numbers, for example, the numbers representing the initial change and the percentage of overlap, refer to the previous adjacent phase.

Data level and level stability. To calculate the average level of performance and the stability of the average level of performance during each phase, similar methods to those described above were employed using a 20% criterion envelope plotted on either side of the average level of performance during each phase. In Figure 1, the

average level of performance during the first baseline phase was 39%, 63% during off-task recording, 93% during on-task recording, and 42% during the second baseline.

Change in the average percentage level of on-task behaviour in each phase of Figure 1, when compared to the initial baseline level of performance is as follows: from the initial baseline average of 39% on-task, there was a 24% increase to an average on-task level of 63% during off-task recording, and a 54% increase to an average of 93% during the recording of on-task behaviour. When compared to the average initial base-rate of 39%, the second base-rate of 42% showed a 3% increase in the average percentage level of on-task behaviours.

Percentage data overlap between adjacent phases. In the manner described earlier, the percentage of data overlap between adjacent phases was calculated. The greater the percentage of data points overlapping between adjacent phases, the less certain one could be about there being a significant performance difference between phases. In Figure 1, the amount of overlap between the base-rate data and the recording of off-task data was 80%. Thus, there does not appear to be a significant difference in the average level of performance between these phases. The amount of overlap between the recording of off-task and the recording of on-task

behaviours was 13%. This is a relatively small amount of overlap and would seem to indicate that on-task behaviour was significantly higher during the on-task recording phase.

There was no overlap between the on-task recording phase and the second baseline indicating that during the second baseline phase there was significantly less on-task behaviour than there was during the recording off-task phase.

Summary and conclusions for student 1. An abrupt increase in on-task performance from the initial baseline phase to the off-task recording phase, and the increase in the average level of performance from 39% during the initial base-rate to 63% during the off-task recording appear to indicate a substantial treatment effect. However, as indicated by the markedly descending trend line during off-task recording, the initial impact of the treatment was short-lived.

With the onset of on-task recording, there was again a marked increase in performance over that observed during off-task recording, a relatively stable trend in the data, a marked increase in both level and trend stability, and little overlap with the previous phase. These observations provide further evidence of a strong treatment effect. Further support for a treatment effect was observed when the second baseline phase was introduced. The level

of on-task behaviour dropped dramatically, returning to the initial baseline level. Thus, from these data, it appears that recording of both off-task and on-task behaviour improved on-task performance, with the greatest improvement being made during the recording of on-task behaviour. However, given the amount of performance overlap between the initial baseline and the off-task recording phase, and the markedly descending trend line during off-task recording, the effects of recording off-task behaviour were both weak and temporary.

Subject 2 (Figure 2). Figure 2 indicates subject two's on-task behaviour during each phase of the study. A summary analysis of performance within and between phases is also shown in the figure.

In Figure 2, the trend alternates between ascending and descending over the first three phases of the study. Over the four phases of the study, the trend is relatively unstable, ranging from 40%-64%. The average level of performance increased over the first three phases from, respectively, 59% to 65% to 81%, and returned to 65% during the final baseline phase. Given this information alone, it appears as if treatment has had a very modest accumulating effect over the two treatment phases. However, the percentage of data overlap between the two treatment and final base-rate phases was respectively 82%, 82% and 80%. This is a very high level of overlap

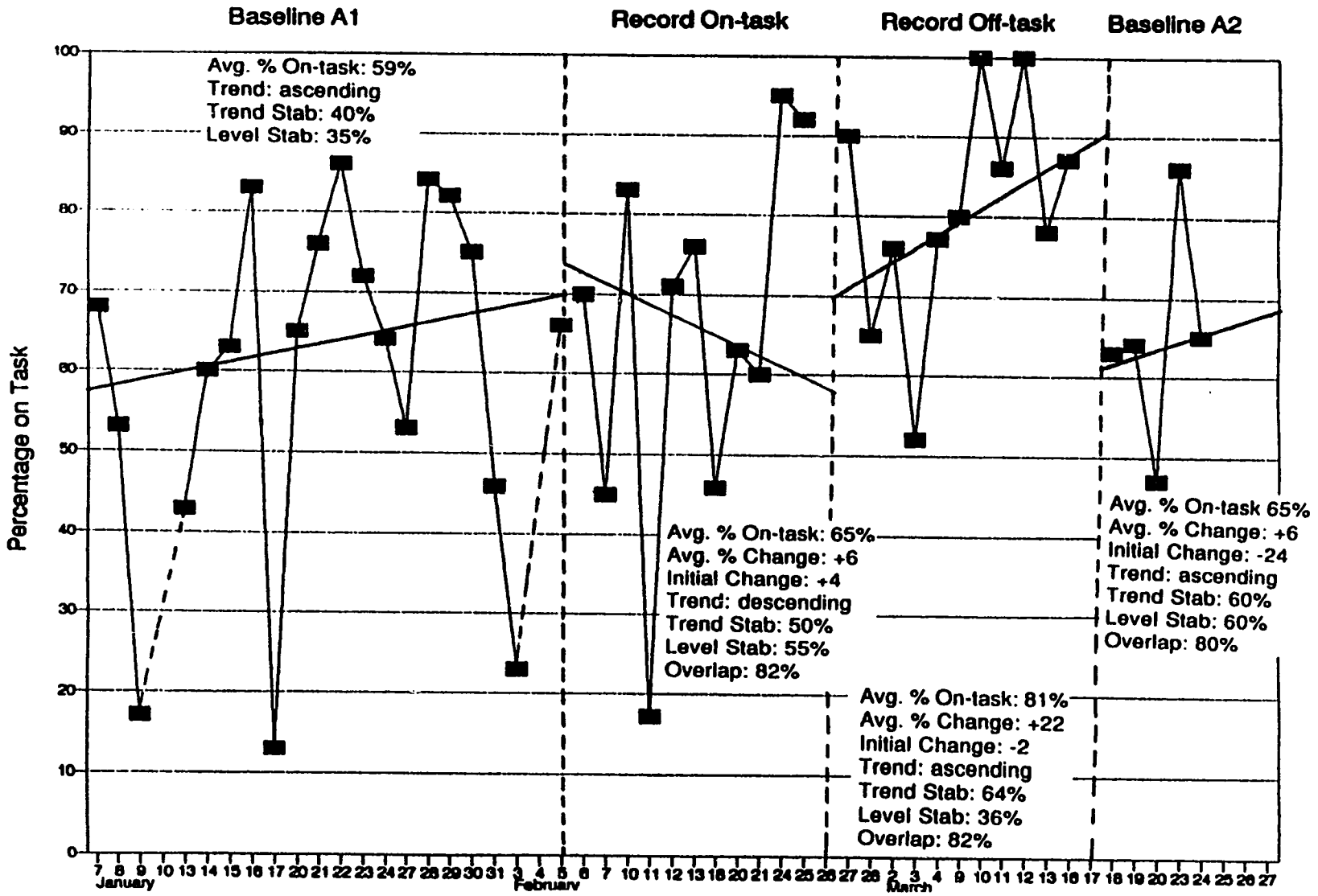


**Figure 2: Subject 2 Percentage on Task**

indicating that there was likely no significant difference in performance in the various phases of the study.

Summary and conclusion for student 2. Given the substantial amount of variability within phases and the amount of data overlap between phases, it does not appear that the treatment had a significant effect on student two's on-task behaviour.

Subject 3 (Figure 3). Figure 3 indicates subject three's on-task behaviour during each phase of the study. As well, a synopsis of performance within and between phases is printed on the figure.

In Figure 3, the trend alternates between ascending and descending during the first three phases of the study, although the descending trend within the recording off-task phase is very slight. Upon the return to the final baseline phase, the data show no trend or slope. Over the four phases of the study, the trends are relatively unstable, ranging from 50%-78%. Although relatively unstable, the trend during the recording on-task phase shows a strong ascending trend. The average level of performance demonstrated a very slight increase over the first two phases from 57% to 59%. During the third phase of the study in which the student was recording on-task behaviour the average level of performance increased to 78%, and returned to an average level of 62% during the final baseline phase. When analysing this information, it appears as if treatment has had

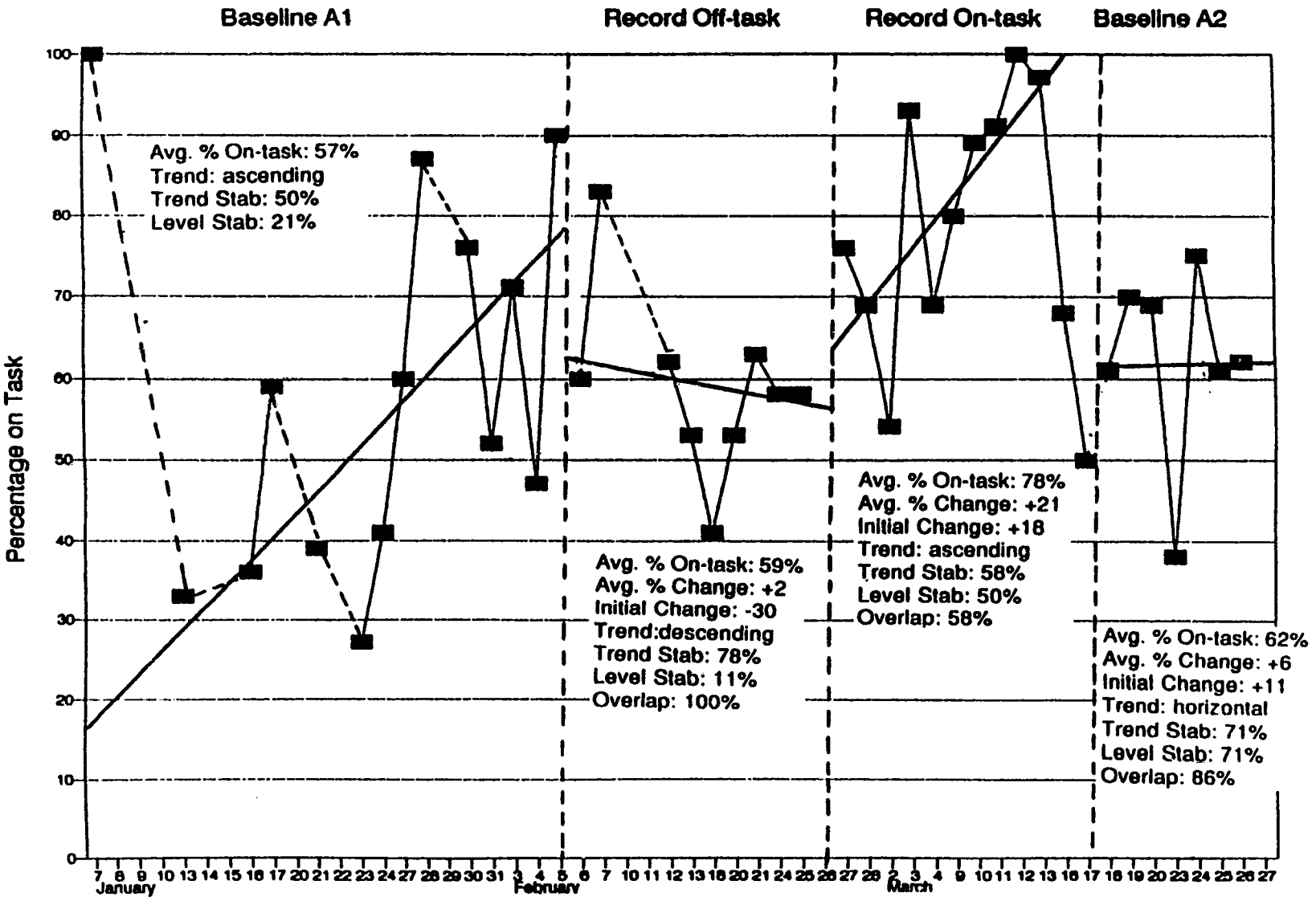


**Figure 3: Subject 3 Percentage on Task**

a modest accumulating effect between the initial baseline phase and the first treatment phase. A more substantial treatment effect occurred upon the change to recording on-task behaviour. However, the percentage of data overlap between the two treatment and final base-rate phases was respectively 100%, 58% and 86%. This is a very high level of overlap indicating that there was likely no significant difference in performance in the various phases of the study.

Summary and conclusion for student 3. Given the substantial amount of variability within phases and the amount of data overlap between phases, it does not appear that the treatment had a significant effect on student three's on-task behaviour.

Subject 4 (Figure 4). Figure 4 indicates subject four's on-task behaviour during each phase of the study. A summary analysis of performance within and between phases is also shown in the figure.

In Figure 4, there is a strong descending trend over the first two phases of the study. During the third phase, in which the student is recording off-task behaviours, the trend changes to a strong ascending one. This ascending trend returns to a descending trend during the final baseline phase. Over the four phases of the study, the trend is quite unstable, ranging from 44%-67%. The average level of performance increased over the first three phases

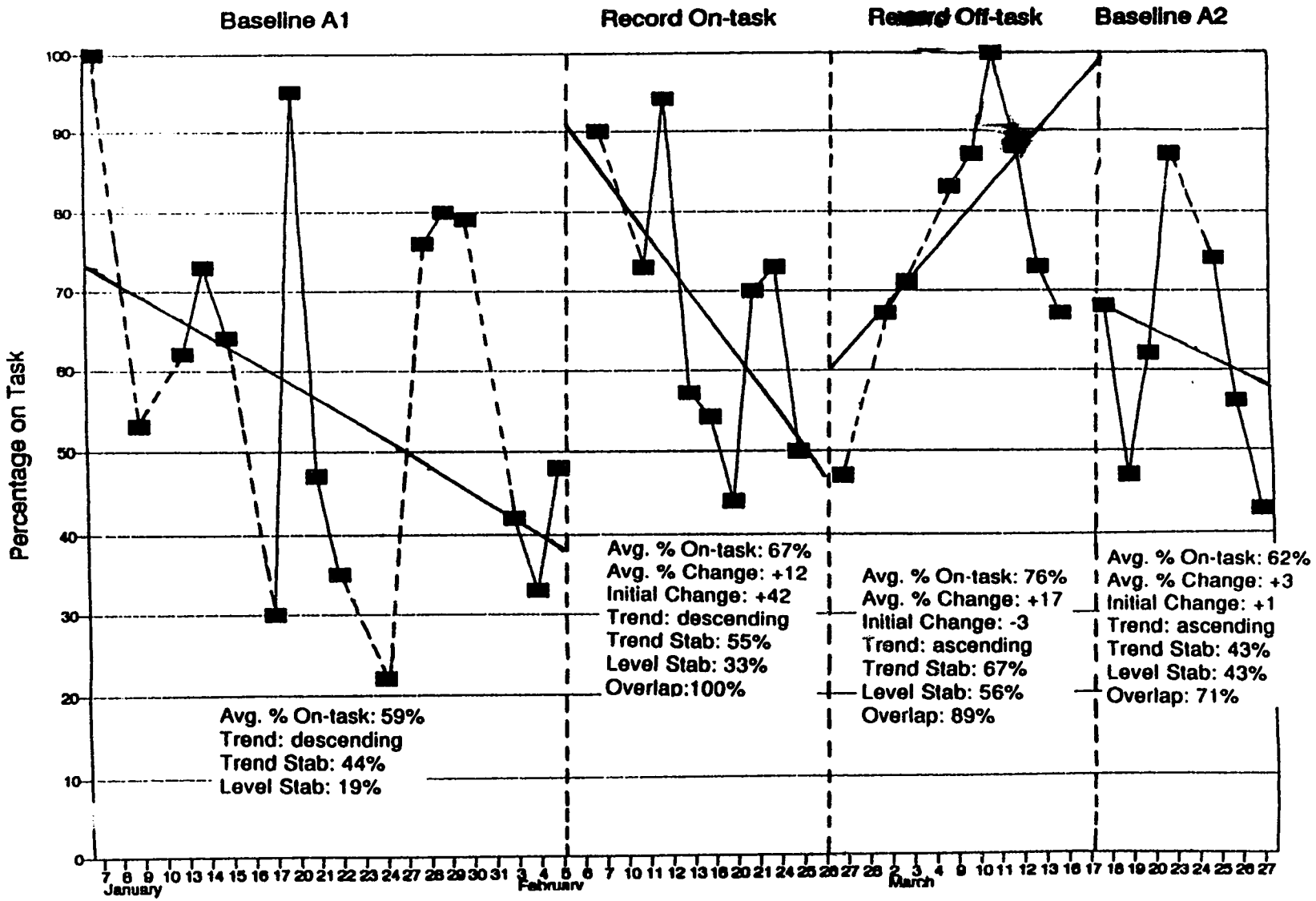


**Figure 4: Subject 4 Percentage on Task**

from, respectively, 59% to 67% to 76%, and dropped to 62% in the final baseline phase. Given this information, it appears there was a modest imorovement in the average performance of on-task performance for Student 4 during the recording on-task behaviour phase. Although the trend during this phase does not substantiate this finding, the trend during the final treatment phase shows a substantial improvement as does the average level of performance. However, the percentage of data overlap between the two treatment and final base-rate phases was very high. Respectively it was 100%, 89% and 71%. This very high level of overlap indicates that there was likely no significant difference in performance in the four phases of the study.

Summary and conclusion for student 4. Given the substantial amount of variability within phases and the amount of data overlap between phases, it does not appear that the treatment had a significant effect on student four's on-task behaviour.

Subject 5 (Figure 5). Figure 5 indicates subject five's on-task behaviour during the initial baseline phase and the first phase of intervention. During the second day of the second phase of intervention, Subject 5 was suspended from class for five days. At the meeting to gain readmittance to the programme, the student was noncompliant, defiant and completely noncommittal to the

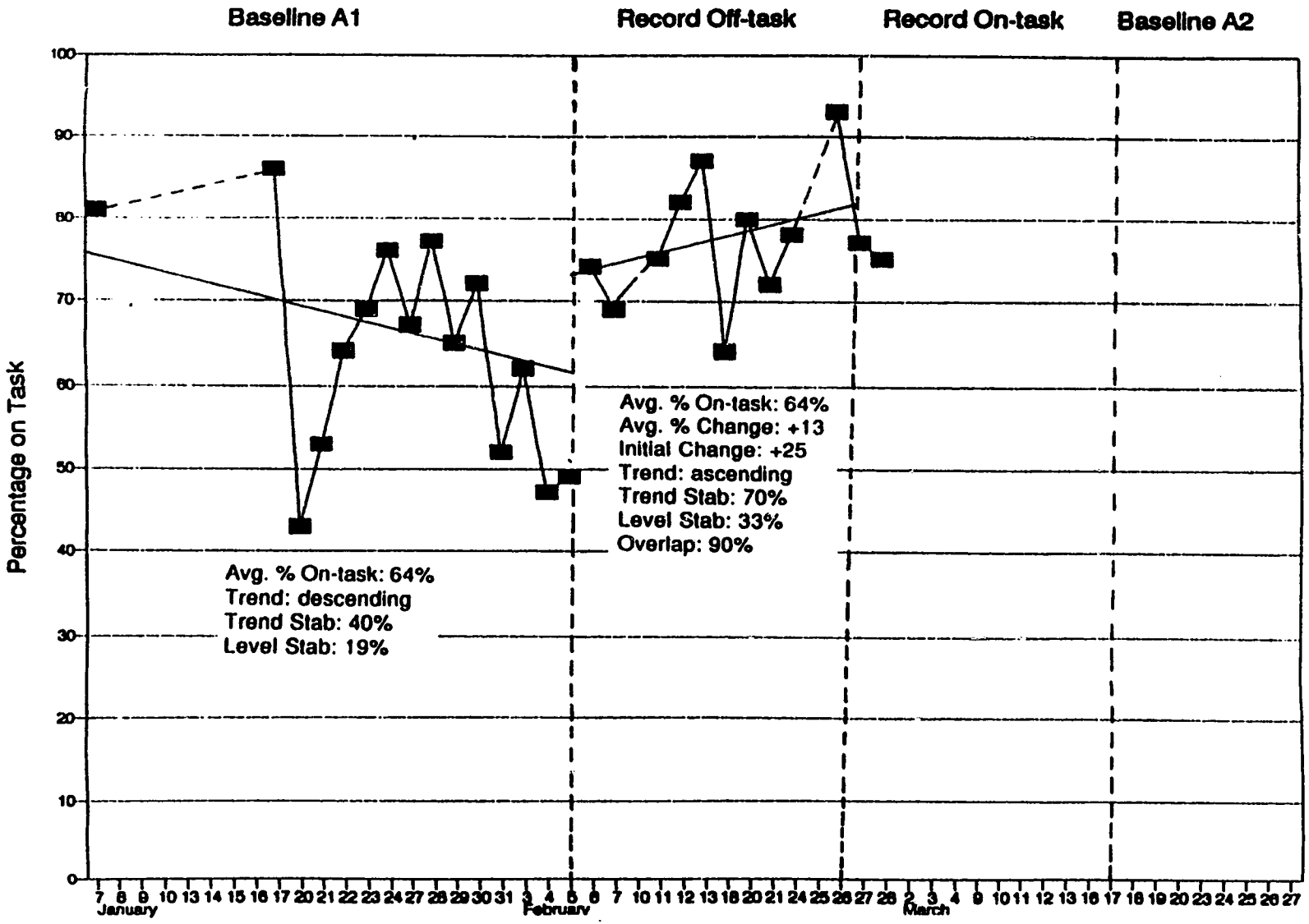


**Figure 5: Subject 5 Percentage on Task**

expectations of the programme. The school administration placed the student on Homebound Instruction; thus, the student was no longer in the class during the intervention sessions.

In Figure 5, the trend changes from a descending trend over the baseline phase to an ascending trend over the intervention phase. Throughout both phases of the study, the trend is unstable, ranging from 40% in the baseline phase and improving to 70% during the treatment phase. The average level of performance increased from 64% to 77%; however, the percentage of data overlap between the baseline phase and the treatment phase was 90%. This is a very high level of overlap which indicates that it was very unlikely that a significant difference in on-task performance occurred in the change from the baseline phase to the treatment phase in which Student 5 recorded off-task behaviours.

Summary and conclusion for student 5. Given the substantial amount of variability within phases and the amount of data overlap between phases, it does not appear that the treatment had a significant effect on student five's on-task behaviour.

Subject 6 (Figure 6). Figure 6 indicates subject six's on-task behaviour during each phase of the study. During the two baseline phases, the trends are indicative of a strong descent in on-task performance. Although the trend does not change to an improving

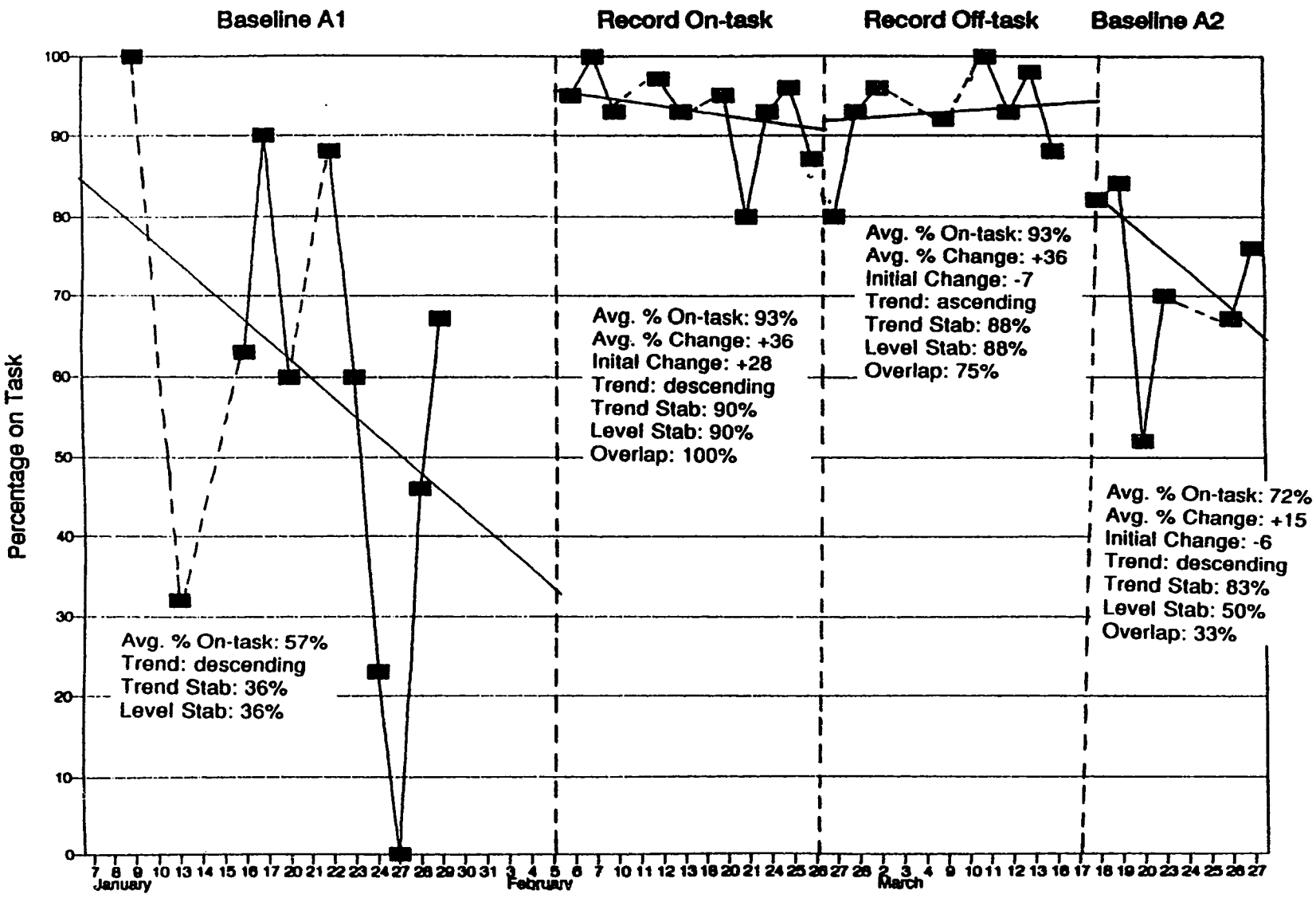


**Figure 6: Subject 6 Percentage on Task**

one during the initial treatment phase, there is quite an improvement in the level and direction of the slope. During the second treatment phase, in which the student is recording off-task behaviours, the trend changes to a slight ascending trend. There is likely no significant difference between these slopes. The trend within the initial baseline phase is highly unstable, 36%. Over the remaining phases of the study, the trend is relatively stable, ranging from 83%-90%. The average level of performance increased over the first two phases from 57% to 93%; maintained the 93% level during the third phase of the study, and dropped to an average level of 72% during the return to baseline conditions. Given the marked increase in the average level of performance and the substantial decrease in performance variability during the two treatment phases, and given the return to baseline level of performance following treatment, it appears that both treatments have had significant positive effects upon on-task behaviour. The amount of overlap between the recording of on-task and the recording of off-task behaviour was 75%. This is a relatively high amount of overlap indicating little, if any, significant differences in on-task performance during these phases. The amount of overlap between the recording of off-task behaviour and the second baseline phase was much lower, 33%. This indicates that during the second baseline phase there was

significantly less on-task behaviour than there was during the preceding treatment phase.

Summary and conclusions for student 6. An abrupt increase in on-task performance from the initial baseline phase to the on-task recording phase, and the increase in the average level of performance from 57% during the initial baseline to 93% during the off-task recording appear to indicate a substantial treatment effect. Except for the instability of the initial baseline trend, there were relatively stable trends in the data, a marked increase in level between baseline and treatment phases, and a relatively small amount of overlap between the recording off-task treatment phase and the second baseline phase in which a drop of on-task performance was noted. These observations provide further evidence of a strong treatment effect for Student 6. Tables 4 to 7 provide a summary for all six students of performance trends, trend stability, performance level, and level stability within phases, as well as performance changes and overlap between phases. A comparison of the averages of the performance of all of the students in each phase provides further insight into the effects of the treatment.

Table 4 reports the average percentage of on-task behaviour during each phase. Over all six students, the average level of on-

Table 4
Average Percentage of On-task Behaviour During Each Phase

| | | Interventions | | | | |
|---|---|---|---|---|---|---|
| | | Phase One | | Phase Two | | |
| Students | Baseline A1 On-task | Recording On-task(B) | Recording Off-task(C) | Recording On-task(B) | Recording Off-task(C) | Baseline A2 On-task |
| 1 | 39 | - | 63 | 93 | - | 42 |
| 2 | 59 | 65 | - | - | 81 | 65 |
| 3 | 57 | - | 59 | 78 | - | 62 |
| 4 | 59 | 67 | - | - | 76 | 62 |
| 5 | 64 | - | 77 | 76 | - | - |
| 6 | 57 | 93 | - | - | 93 | 72 |
| Average | 56 | 75 | 66 | 75 | 83 | 61 |
| Average/Phase | 56 | 71 | | 84 | | 61 |

Treatment On-Task Average: 75; Treatment Off-Task Average: 75

task behaviour when on-task behaviour was being recorded, was 75% during phase one, and 75% during phase two. The average level of on-task behaviour, when off-task behaviour was being recorded, was 66% during phase one and 83% during phase two. The average on-task behaviour was 75%, when on-task was recorded, and 75%, when off-task was recorded, regardless of the phase of the study. Thus, on average, there was no significant difference in the level of on-task performance when the subjects recorded on- or off-task behaviour.

The average rate of on-task behaviour during baseline was 56%. The average during phase one, regardless of whether on- or off-task behaviour was being recorded was 71%; the average during phase two was 84%. Thus, recording on- or off-task behaviour substantially improved on-task behaviour over that observed during the initial baseline period. The effect of the treatment increased from phase one to phase two, regardless of whether on- or off-task behaviour was recorded.

Table 5 reports the change in the average percentage level of on-task behaviour in each phase compared to the average initial baseline level of performance. The average increase across all six students, when on-task behaviour was being recorded was +18 during phase one and +21 during phase two. The average increase of

Table 5

Change in the Average Percentage Level of On-task Behaviour in Each Phase Compared to the Initial Baseline Level of Performance

| | Interventions | | | | |
|---|---|---|---|---|---|
| | Phase One | | Phase Two | | |
| Students | Recording On-task(B) | Recording Off-task(C) | Recording On-task(B) | Recording Off-task(C) | Baseline A2 On-task |
| 1 | - | +24 | +54 | - | +3 |
| 2 | +6 | - | - | +22 | +6 |
| 3 | - | +2 | +21 | - | +5 |
| 4 | +12 | - | - | +17 | +3 |
| 5 | - | +13 | +12 | - | - |
| 6 | +36 | - | - | +36 | +15 |
| Average | +18 | +13 | +21 | +25 | +6 |
| Average/Phase | +16 | | +27 | | +6 |
| | Treatment On-task Average: +20; Treatment Off-task Average: +19 | | | | |

on-task behaviour, when off-task behaviour was being recorded, was +13 during phase one and +25 during phase two. The average increase of on-task behaviour was +20, when on-task was recorded, and +19 when off-task performance was recorded, regardless of the phase of the study. Thus, on average, there was no significant difference in the increase of on-task performance from the initial baseline phase when the subjects recorded on- or off-task behaviour.

The average increase of on-task behaviour during phase one, regardless of whether on- or off-task behaviour was being recorded was +16; the average during phase two was +27. Thus, recording on- or off-task behaviour improved on-task behaviour over that observed during the initial baseline period. The effect of the treatment increased from phase one to phase two, regardless of whether on- or off-task behaviour was recorded.

Hypotheses:

In the following discussion the results of the study will be interpreted in relation to the hypotheses.

Hypothesis 1 Hypothesis 1 stated that, "There will be an increase in on-task behaviour, from baseline conditions, when the students were asking themselves the question 'When I heard the tone was I on-task?'." As explained above, the evidence reported in

Tables 4 and 5 support this hypothesis.

Hypothesis 2. Hypothesis 2 stated that, "There will be an increase in on-task behaviour, from baseline conditions, when the students are self-recording off-task behaviours". As explained above, the evidence reported in Tables 4 and 5 support this hypothesis.

Hypothesis 3. Hypothesis 3 stated that, "The subject's on-task behaviour will show the greatest improvement during the intervention phase in which they are recording on-task behaviours." In Table 4, the average percentage of on-task behaviour, when on-task behaviour was recorded was 75%; when off-task behaviour was recorded the average was also 75%. In Table 5, the change in the average percentage of on-task behaviour, in each phase, compared to the initial baseline level was 20% when on-task behaviour was recorded and 19%, when off-task behaviour was recorded. Thus, according to Tables 4 and 5, there was no difference in the average of the students' on-task behaviour, when data was collected on either on- or off-task behaviour. Therefore, hypothesis 3 was not supported.

Interpretation of the results of the data must be made in light of the data presented in Tables 6, 7 and 8. The marked, average amount of data overlap between adjacent phases, regardless of

Table 6
Percentage of Data Overlap Between Adjacent Phases

| | Interventions | | | | |
|---|---|---|---|---|---|
| | Phase One | | Phase Two | | |
| Students | Recording On-task(B) | Recording Off-task(C) | Recording On-task(B) | Recording Off-task(C) | Baseline A2 On-task |
| 1 | - | 80 | 13 | - | 0 |
| 2 | 82 | - | - | 82 | 80 |
| 3 | - | 100 | 58 | - | 86 |
| 4 | 100 | - | - | 89 | 71 |
| 5 | - | 90 | 100 | - | - |
| 6 | 100 | - | - | 75 | 33 |
| Average | 94 | 90 | 57 | 82 | 54 |
| Average/Phase | 92 | | 70 | | 54 |

Table 7
Trend Stability Across Phases Assessed at 20 Percent Criterion

| | | Interventions | | | | |
|---|---|---|---|---|---|---|
| | | Phase One | | Phase Two | | |
| Students | Baseline A1 On-task | Recording On-task(B) | Recording Off-task(C) | Recording On-task(B) | Recording Off-task(C) | Baseline A2 On-task |
| 1 | 33 | - | 60 | 100 | - | 57 |
| 2 | 40 | 50 | - | - | 64 | 60 |
| 3 | 50 | - | 78 | 58 | - | 71 |
| 4 | 44 | 55 | - | - | 67 | 43 |
| 5 | 40 | - | 70 | - | - | - |
| 6 | 36 | 90 | - | - | 88 | 83 |
| Average | 41 | 65 | 69 | 79 | 73 | 63 |
| Average/Phase | 41 | 67 | | 75 | | 63 |

Table 8
Level Stability Across Phases Assessed at 20 Percent Criterion

| | | Interventions | | | | |
|---|---|---|---|---|---|---|
| | | Phase One | | Phase Two | | |
| Students | Baseline A1 On-task | Recording On-task(B) | Recording Off-task(C) | Recording On-task(B) | Recording Off-task(C) | Baseline A2 On-task |
| 1 | 33 | - | 50 | 88 | - | 57 |
| 2 | 35 | 55 | - | - | 36 | 60 |
| 3 | 21 | - | 11 | 50 | - | 71 |
| 4 | 19 | 33 | - | - | 56 | 43 |
| 5 | 40 | - | 70 | - | - | - |
| 6 | 36 | 90 | - | - | 88 | 50 |
| Average | 31 | 60 | 44 | 69 | 60 | 56 |
| Average/Phase | 31 | 52 | | 65 | | 56 |

whether data was collected on-task (average overlap of 76%) or off-task (average overlap of 86%), in phase one (average overlap of 92%), or in phase two (average overlap of 70%), substantially reduces the significance of any differences in performance levels and trends observed in the data (see Table 6).

The marked instability of the trends and levels of data for all subjects across most phases, except for students one and six, also substantially reduces the significance of any differences in trends across phases (see Tables 7 and 8).

Hypothesis 4. Hypothesis 4 stated that, "The reliability of the students' self-recording data will be lower during the intervention phase in which recording off-task behaviour occurs".

The reliability between the students' self-recording and the researcher's data did not appear to show any consistent trend during the intervention phases (see Table 3). Although Subjects 2, 4, and 6 had a higher reliability coefficient during the phase in which they focussed on on-task recording, 74%, 75% and 92% respectively; the data from students 1 and 3 did not corroborate this finding. These students' reliability were both 62%. However, the order of the highest reliability was consistent across subjects. Regardless of the behaviour being recorded, reliability was highest in the first intervention phase. The range of reliability measures was 65%-91%

(average, 75%) during the first phase of intervention. During the second phase of intervention, the reliability measures ranged between 62 percent and 88 percent (average, 70%). Students 2, 4, and 6 were focussing on on-task behaviours during their first phase of intervention whereas students 1, 3 and 5 were focussing on off-task behaviours during their first phase of self-recording. As all subjects had the greatest reliability during their first phase of self-recording, perhaps the novelty of the self-recording procedure increased the likelihood of reliable recording. These findings raise questions for further research.

# CHAPTER VI

# DISCUSSION

Because of the variability of the students' baseline data preceding the intervention phases of this study, it was difficult to make conclusive judgements as to the effects of the interventions on the students' on-task behaviours during subsequent phases of the study. There were no consistent upward or downward trends in the initial baseline data. Rather, across all subjects, the baseline data path exhibited variable patterns of highs and lows. Although the baseline observation phase was extended, there was still a high degree of variability when the intervention was started. Initially, the baseline was to have been 14 days; however, due to the magnitude of variability a lengthier baseline period was conducted in an attempt to establish stability. Eventually, however, the study was initiated so that both intervention phases and a return to baseline conditions could be completed before the Spring Break school holiday. Therefore, the changes in the dependent variable values during the intervention phases provided a weaker demonstration of experimental control than if intervention had been preceded by a stable baseline data path.

According to Barlow and Hersen (1984), behaviour is a function

of an interaction of events. Barlow and Hersen (1984) suggested that the sources of variability be assessed systematically when dealing with a variable baseline. Although an analysis of the sources of variability was possible, control of these variables was not. The students' environmental variables affecting the data stability are discussed below.

Possible Sources of Variability

Integration. Four out of the six students participating in the study were integrated into regular classrooms for various subjects. Therefore, at various times of the day, depending upon the day, the students would leave the self-contained classroom to join the regular students in a variety of core subject areas and option classes. There were times when the students would be sent back from these classrooms because of high rates of disruptive behaviour. When this happened, depending upon the explosiveness of the situation, the student was suspended from school and sent home for the day.

Suspensions. Moreover, suspensions lasting longer than one day occurred, removing some students from the classroom and ultimately interfering with the continuity of both the baseline and the intervention data.

Home-based problems. A variety of problems occurring within

the students' family homes often influenced marked behavioural changes in the students' school behaviours. Many "out of school" actions affected their "in school" behaviour and whereas a direction from the teacher one day might result in ready compliance, the same direction another day might result in violent and unpredictable behaviours.

Medication. In order to deal with the unpredictable behaviours of the students, they were often prescribed medication. The medication was administered by the students' caregivers, parents and/or group home staff, but not by school personnel. Occasionally, the students refused to take the medication, instead tonguing or cheeking it, duping those administering the pills. Furthermore, there were often changes in the level of medications which affected the students' academic and prosocial behaviours.

Classroom setting. The uniqueness of the classroom setting attracted frequent visitors. Different School Board personnel toured the classroom facilities and demonstrated an interest in the students within the class. These visitors, as well as students experiencing behavioural difficulties in other classes within the school, caused a disruption to the ongoing task when they entered the room. Other teachers, within the school, used the self-contained classroom to send their students who were not coping with the

educational activity in their classroom. Because these students were interfering with the teaching and learning process in their respective classes, the teachers in the self-contained programme were used as a resource to deal with such students until they were able to appropriately manage their behaviour.

Student tasks. Another source of variability affecting on-task behaviour was the nature of the students' assigned school tasks. If the tasks were interesting and enjoyable to the students, they would become immersed in the action; however, during an academic task, problems relating to not understanding the assignment might occur leading to restlessness and subsequent off-task behaviour. The instructional subject matter during Periods 2 and 5 and the resulting tasks were not held constant throughout the intervention sessions; therefore, there was a variation in the nature of the students' tasks.

The variety of different influences upon the students' behaviours produced great variability in the students' on-task performance. Consequently, it was difficult to demonstrate that the self-recording intervention produced a clearly definitive experimental effect because the data patterns presented in the graphs depicted variable data paths within conditions and there was considerable overlap between conditions. The high percentages of

overlap between the baseline and intervention phases in this study made it difficult to assess the impact the intervention had on the subjects' behaviours. Thus, due to the data instability and the high percentage of overlap between phases, small changes in the percentage of on-task behaviour during intervention provided a weaker demonstration of experimental control than if the interventions had been preceded by a stable data path and a lower percentage of overlap between the phases.

All of the students showed an overall average increase in their performance of on-task behaviours during the phases in which self-recording occurred. A small increase over the students' average performance of on-task behaviour during the initial baseline phase was maintained during the post-treatment baseline phase. Another indication of the success of the self-recording procedure, with the students in this study, was the accelerating trend line throughout the second intervention phase. Furthermore, when the students were asked to evaluate the self-recording procedure, they were positive in their responses to it (see Appendix 3).

In addition to the self-recording intervention there were two variables that may have influenced the results of this study. The passage of time across the intervention sessions and the money accorded to each student for completion of each data sheet were

confounding variables. If the students' self-recording data collection method had been the influential variable, then one type of data collection would have resulted in more on-task behaviour regardless of time. However, since the students' on-task behaviour improved with time, regardless of the data collection methods employed, then it is apparent that, although self-recording may have been influential, the type of data collection was not the only variable. It is uncertain, therefore, whether the improvement resulted from the data collection method combined with the passage of time and/or the money reinforcement.

The experimental design of this study had some limitations. The A-B-C-A design was used to investigate the effect of recording on-task behaviours and off-task behaviours on the students' on-task performance. To provide a more definitive determination of the functional relationship of the intervention upon the dependent variable, the interventions should have been repeatedly introduced to each subject. Due to time constraints, however, repeated introductions of the interventions were not possible and each intervention was introduced once only.

Areas for Further Research

Experimental results indicated that self-recording does not have to be accurate in order to produce desirable changes in on-task

behaviour. Therefore, increased accuracy may not lead to better performance. Further research is required to determine the relationship between self-recording accuracy and the effectiveness of the self-recording procedure in increasing time on-task.

Furthermore, although the procedure was not definitively effective in establishing the relationship between self-recording on- or off-task behaviours on the students' on-task behaviours due to the high variability of the reported data, it did appear that there was a positive relationship between student self-recording and student on-task performance, for the subjects' in this study. However, data were not collected on the subjects' on-task behaviours during their classes with the regular students. As the students' integration into core subjects and option classes was continued during the phases of intervention, future research could provide an assessment of the generalization of their behaviour during the integrated classes.

The findings of the present study indicate a relationship between self-recording and on-task performance with students with behaviour disorders of a defiant and aggressive nature. The procedure is inexpensive, and easy to implement and manage. Teachers working with students experiencing behaviour disorders may wish to consider the use of self-recording of on-task

responding as an intervention procedure. Although the current study did not discern any differences between recording on- and off-task behaviours, anecdotal data indicated that the students participating in the study preferred the on-task recording (see Appendix 3).

# CHAPTER VII.

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# APPENDICES

# APPENDIX 1

Student Self-recording sheet - Phase B

Student Self-recording sheet - Phase C

SELF-RECORDING SHEET PHASE B

STUDENT_____ DATE_____

| WHEN I HEARD THE TONE, WAS I ON-TASK? | | |
|---|---|---|
| TONE NUMBER | YES | NO |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| **ON-TASK** | | |

SELF-RECORDING SHEET PHASE C

STUDENT_____ DATE_____

| WHEN I HEARD THE TONE, WAS I OFF-TASK? | | |
|---|---|---|
| TONE NUMBER | YES | NO |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| **OFF-TASK** | | |

APPENDIX 2

On-Task Behaviour Definitions

Off-Task Behaviour Definitions

LOOKING AT THE TEACHER WHEN SHE OR HE IS TALKING TO YOU,

OR

LOOKING AT THE STUDENT TALKING, IF IT IS A TEACHER APPROVED CLASS DISCUSSION

OR

TALKING WITH THE TEACHER, IF YOU ARE NOT INTERRUPTING, AND IF THE TEACHER ALLOWS THE CONVERSATION,

OR

READING ASSIGNED MATERIAL OR LOOKING AT TASK RELATED MATERIALS,

OR

WRITING WITH YOUR PEN OR PENCIL,

OR

GETTING REFERENCE MATERIALS FROM WITHIN THE CLASSROOM (LIMITED TIME AVAILABLE FOR THIS)
(A) - SHARPEN YOUR PENCIL AND GO BACK TO TASK
(B) - CHECKING THE DICTIONARY, ATLAS, ETC. AND GOING BACK TO TASK
(C) - LOOKING AT THE GLOBE AND GOING BACK TO TASK.

NOT LOOKING AT THE TEACHER WHEN SPOKEN TO BY THE TEACHER, UNLESS YOU ARE CONTINUING WORKING ON YOUR ASSIGNMENT,

OR

NOT LOOKING AT THE STUDENT TALKING, IF IT IS A TEACHER APPROVED CLASS DISCUSSION, UNLESS YOU ARE CONTINUING WORKING ON YOUR ASSIGNMENT,

OR

INTERRUPTING THE TEACHER WORKING WITH ANOTHER STUDENT,

OR

MAKING NOISES, (WHISTLING, SINGING, ETC.),

OR

CONTINUING A DISCUSSION AFTER THE TEACHER HAS DIRECTED YOU BACK TO WORK,

OR

NOT READING ASSIGNED MATERIALS,

OR

GAZING AWAY FROM ASSIGNMENT OR RELATED MATERIALS,

OR

THROWING OBJECTS,

OR

WANDERING ABOUT THE ROOM WITHOUT A TASK-RELATED PURPOSE,

OR

PHYSICAL AGGRESSION OR VERBAL AGGRESSION; TEMPER OUTBURST; HITTING; NAME CALLING; TEASING PEERS; RESISTANCE TO OBEY TEACHER, SWEARING.

Why?

Did the tones help you stay on-task during the class when you were self-recording?

Were you on-task more during the periods when you were self-recording?

Did the tones redirect you back on-task if you were off-task?

Were you usually honest when you filled in the sheet or did you just put anything down?

Did you usually wait for the tone before marking the sheet or did you fill it in whenever you thought about it?

Did you think that you wouldn't get paid if you had too many off-task checks?

Overall did you like the self-recording procedure? What did you like the best about it?

Did you prefer to direct your attention to being on-task or off-task?

*On-task*

Why?

*It's just easier to check*

Did the tones help you stay on-task during the class when you were self-recording?

*A little bit*

Were you on-task more during the periods when you were self-recording?

*Yes*

Did the tones redirect you back on-task if you were off-task?

*Sometimes*

Were you usually honest when you filled in the sheet or did you just put anything down?

*No*

Did you usually wait for the tone before marking the sheet or did you fill it in whenever you thought about it?

*Sometimes*

Did you think that you wouldn't get paid if you had too many off-task checks?

*No*

Overall did you like the self-recording procedure? What did you like the best about it?

*You got free money*

Did you prefer to direct your attention to being on-task or off-task?

*Doesn't matter*

Why?

Did the tones help you stay on-task during the class when you were self-recording?

*No everytime a tone went we'd have to stop working and do a check and you would always nag us to check our sheet*

Were you on-task more during the periods when you were self-recording?

*No*

Did the tones redirect you back on-task if you were off-task?

*No*

Were you usually honest when you filled in the sheet or did you just put anything down?

*Yes, I was honest. Sometimes I put anything down.*

Did you usually wait for the tone before marking the sheet or did you fill it in whenever you thought about it?

*Whenever I thought about it.*

Did you think that you wouldn't get paid if you had too many off-task checks?

*No*

Overall did you like the self-recording procedure? What did you like the best about it?

*It was ok. I liked the money best.*

Did you prefer to direct your attention to being on-task or off-task?

*On-task*

Why?

*I like to record positive behaviour*

Did the tones help you stay on-task during the class when you were self-recording?

*A little*

Were you on-task more during the periods when you were self-recording?

*Yes*

Did the tones redirect you back on-task if you were off-task?

*Yes*

Were you usually honest when you filled in the sheet or did you just put anything down?

*Sometimes*

Did you usually wait for the tone before marking the sheet or did you fill it in whenever you thought about it?

*Waited for the tone.*

Did you think that you wouldn't get paid if you had too many off-task checks?

*No*

Overall did you like the self-recording procedure? What did you like the best about it?

Yes, the money. And the good feeling.

Subject 6

Did you prefer to direct your attention to being on-task or off-task?

*On-task*

Why?

*To get out of this class and to avoid a hassle.*

Did the tones help you stay on-task during the class when you were self-recording?

*Yes*

Were you on-task more during the periods when you were self-recording?

*Yes*

Did the tones redirect you back on-task if you were off-task?

*Yes*

Were you usually honest when you filled in the sheet or did you just put anything down?

*Yes*

Did you usually wait for the tone before marking the sheet or did you fill it in whenever you thought about it?

*No, I filled it whenever I thought about it.*

Did you think that you wouldn't get paid if you had too many off-task checks?

*No*

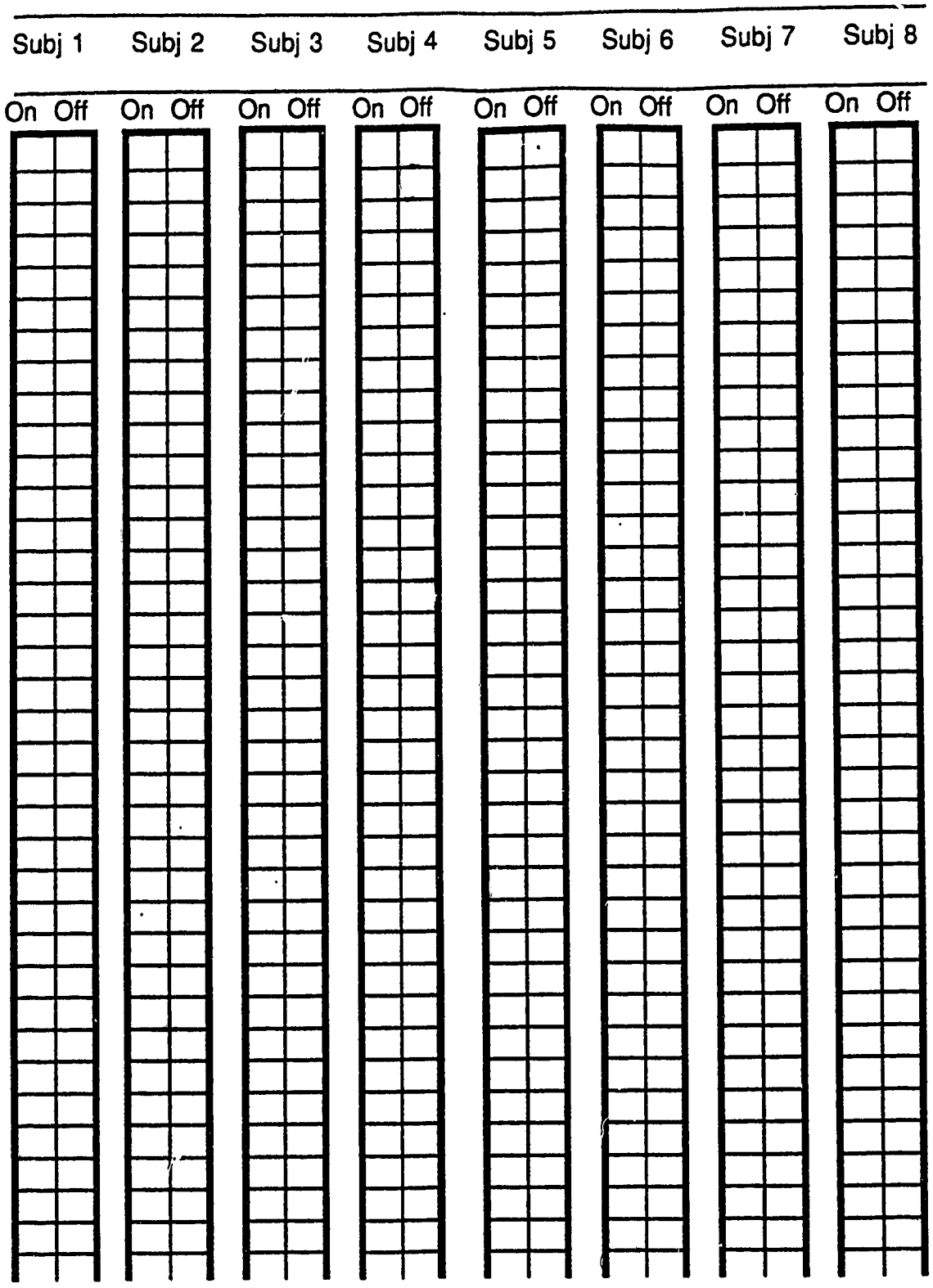
Overall did you like the self-recording procedure? What did you like the best about it?

*Yes. Getting paid was the best.*

# APPENDIX 4

## Teacher/Researcher Data Collection Sheets

BASELINE


Subj 1
Subj 2
Subj 3
Subj 4
Subj 5
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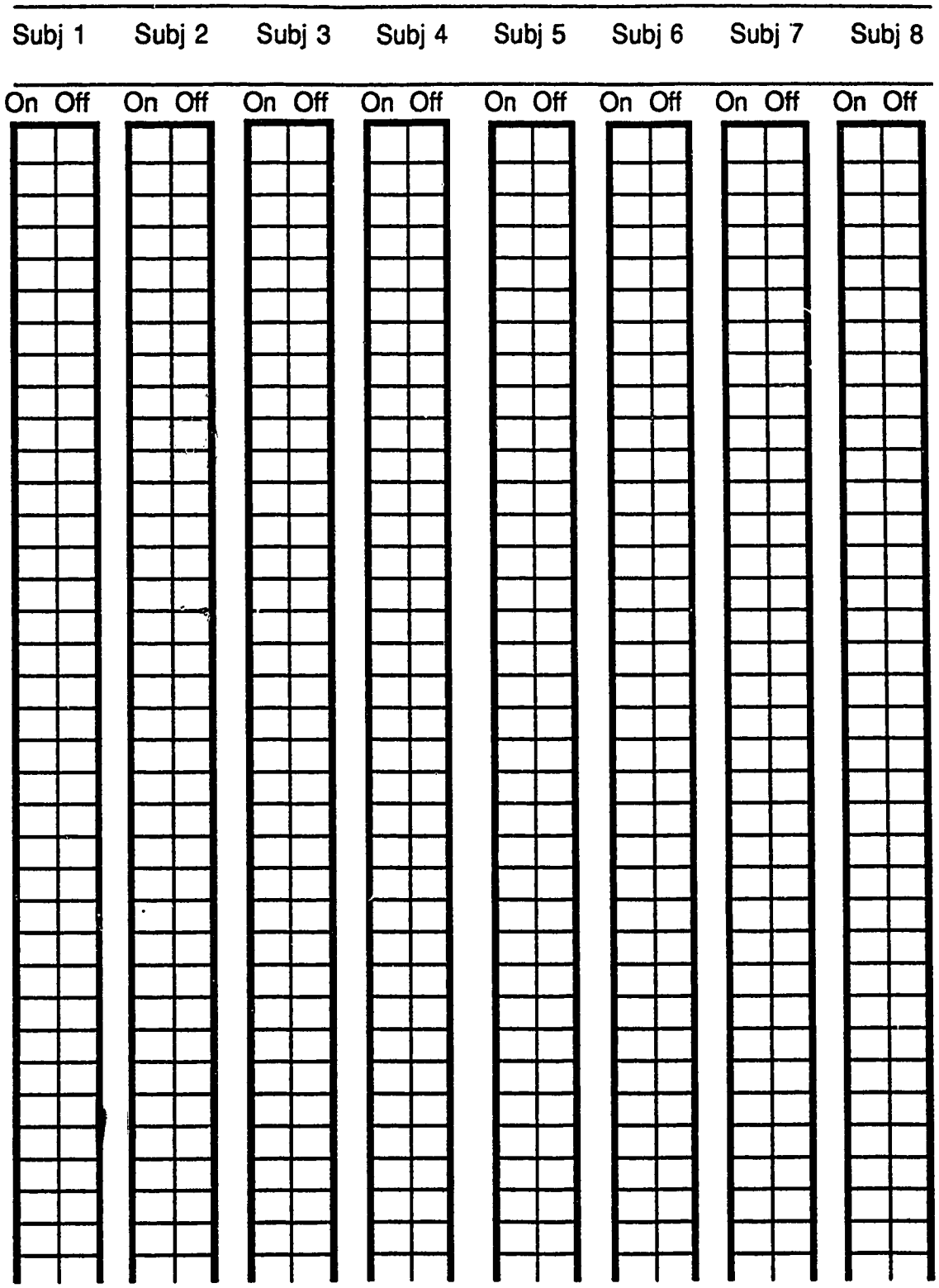
INTERVENTION



DATA MAINTENANCE SHEET

STUDENT_____PHASE_____DATE_____

| | OBSERVER DATA | | STUDENT DATA | | |
|---|---|---|---|---|---|
| TONE # | #ON-TASK | #OFF-TASK | #ON-TASK | #OFF-TASK | RELIABILITY |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| TOTAL | | | | | |

TOTAL RECORDED

INTERVENTION PHASE_____

TALLY OF ON-TASK AND OFF-TASK PERCENTAGES

| DATE | TOTAL #/COMMENT | ON-TASK % | OFF-TASK % |
|---|---|---|---|
| | | | |