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ABSTRACT

Research investigating the performance of students enrolled in courses taught by a Personalized System of Instruction (PSI) has tended to support the claim that PSI is a superior teaching method. The present research study isolated the self-pacing aspect of PSI courses and attempted to teach 13 academically deficient first year college students not to procrastinate, possibly the major contributor to high withdrawal rates. The procedure was effective for reducing procrastination. (Author)

A PROCEDURE TO ESTABLISH SELF-PACING BEHAVIORS IN ACADEMICALLY DEFICIENT FIRST YEAR STUDENTS.

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by

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Abstract

Research investigating the performance of students enrolled in courses taught by a Personalized System of Instruction (PSI) has tended to support the claim that PSI is a superior teaching method.

However, high withdrawal rates has obscurred the effectiveness. The PSI teaching system is advantageous for most students but, presents difficulties for students who have not performed well with traditional teaching methods.

The present study isolated the self-pacing aspect of PSI courses and attempted to teach thirteen academically deficient first year students not to procrastinate, possibly the major contributor to high withdrawal rates. The procedure was effective for reducing procrastination.

A PROCEDURE TO ESTABLISH SELF-PACING BEHAVIORS IN ACADEMICALLY DEFICIENT FIRST YEAR STUDENTS.

Since Keller (1968) introduced the Personalized System of Instruction (PSI), research comparing this method to more traditional approaches to education have concluded that PSI students perform better than traditionally taught students (Born, Gledhill & Davis, 1972; McMichael & Corey, 1969; Sheppard & MacDermot, 1970; and Alba & Pennypacker, 1972). The results of these studies have been questioned because of the high withdrawal rate in the PSI sections. Quite often students who withdraw have a lower grade point average; their withdrawal leaves a larger proportion of higher grade point average students in the class (Born & Whelan, 1973). High school class rank, determined by grade point average, has been shown to be an effective predictor of success in a PSI course (Wood & Wylie, 1975). The proportion of students failing to complete course requirements is often substantial (25% in Lloyd & Knutzen (1969) and 30% in Sheppard & MacDermot (1970)).

One characteristic of PSI courses which may contribute to the withdrawal rate is the fact that students determine when they will complete assignments. If students with lower grade point averages also procrastinate, the self-pacing feature of the method may create an unfavorable situation. Pacing may be

visualized as a continuum. Some studies have completely replaced the student-pacing feature with instructor-paced deadlines or contingencies for completing assignments (Mawhinney, Bostow, Laws, Blumenfeld & Hopkins, 1971; Bristol & Sloane, 1974; and Miller, Weaver & Semb, 1974). Since students indicate the self-pacing feature is desirable (Kulik, Kulik & Carmichael, 1974), a method for training students in those responses which lead to success in self-pacing courses would permit this PSI characteristic to remain part of the teaching method. One such training method was implemented in this study.

METHOD

Subjects

Drake University admits students who score, on the average, two standard deviations below the mean on college entrance exams on a probationary basis. Thirteen volunteers from this group participated in this study. Their mean high school grade point average was 2.0; the mean high school class rank was the 18th percentile; and their mean score on the ACT college entrance exam was 16. They were enrolled in a one-credit-hour pass/fail course.

Course Description

A monitored study area was made available from 7:00 to 10:00

Monday through Thursday in the university library. Students were expected to complete 30 one-hour assignments, which would earn them 1200 points.

Points were accumulated in three different ways; 1) for completion of assignments, 2) for signing in and remaining at the study area for one hour (working on anything), and 3) for signing in with no further points awarded for working. (See Table 1.)

TABLE 1

Dependent Variables

The following response measures were recorded for each student during baseline and during each of the subsequent experimental conditions.

Assignments. An acceptable assignment was any university related work which was assigned in other courses in which the student was enrolled and which required approximately one hour to complete. For example, reading a specified number of pages (determined by size and content of book) and underlining important material. Reading and outlining a certain number of pages was also acceptable. Writing a paper was a third example. Combinations of these behaviors also qualified. Acceptability was determined by the monitor present in the study area.

Remaining for one hour. A student could sit anywhere in

the study area, after signing in with the monitor. Every fifteen minutes the monitor observed attendance. Those students which remained for at least one hour, and did not work on assigned material, earned points.

Signing in. Students were awarded points for signing in with the monitor. They could leave immediately afterward with no penalty.

Procedure

An average rate line was drawn at the end of each week for each subject. Their progress was charted by using 30 assignments on the ordinate and 13 weeks on the abscissa. The average rate line was based on their current assignment completions and the time available in the remainder of the semester. If there were 5 weeks remaining in the semester and a student had completed 20 of the 30 assignments, their average rate line would have a slope equalling 2 assignments/week.

Baseline. Students received 30 non-contingent points per day. Those which attended the study area were allowed to work on the 30 required assignments, but did not receive points contingent on doing so. Baseline initially lasted one week for all students. Thereafter, duration in any condition depended upon the students' responding.

Sign-in. Signing in with the monitor was point-contingent

(30 per day) and was intended to shape the basic behaviors required for completion of the course. The student could work on the assigned material, but received no points for that work. If, after one week, the subject met projections for completion of the assignments, they were reassigned to the baseline condition. (See Table 1.)

Sign-in, remain and work. If the student failed to meet the weekly projection, they were assigned the next experimental condition. This condition utilized points contingent on completion of the 30 required assignments (10 per assignment), signing in and remaining for one hour (10 per hour) and points contingent on signing in (10 per day). This condition was intended to shape the behaviors necessary for completion of the required assignments, and to fade the use of attendance-contingent points for those students who attend the study area but do not work on the required assignments. If the student met projections for completion of assignments, they were reassigned the previous condition. If they failed to meet projections, they were assigned the next condition. (See Table 1.)

Remain and work. Sign-in points were entirely faded and assignment contingent points were more heavily emphasized (20 per assignment). Remaining for one hour also earned 10 points. This condition was designed to continue the shaping

of one-hour study habits and assignment completions. When the student met projections for completion of assignments, they were reassigned the previous condition. (See Table 1.)

Work only. When a student failed to meet the remain-and-work projections, they were assigned this final condition. Points could only be earned for completion of required assignments (30 per assignment). This procedure shifted the entire emphasis to the student's slow progress in the class and their lack of assignment completion. If the student met projections, they were reassigned the previous condition. If they failed to meet projections, they remained in this condition. The five experimental conditions are summarized in Table 1.

Reliability

The response measures were independently recorded by a second observer once each week for 13 weeks. Assignment completion was based on a minimum time factor (one hour) and fulfillment of the decided upon requirements (i.e., number or pages). Percent agreement between observer and monitor was 100% throughout the study.

RESULTS

Eleven students completed all of the course requirements

by the end of the semester, one student completed 28 assignments and received an "Incomplete" that was changed to "Credit" upon completion of the two remaining assignments 5 weeks later, and one student completed 3 of the required assignments and received a "No Credit" course grade.

Students were grouped into three major categories. These categories, based on their modal experimental condition, include six students who remained in baseline 30 to 77% of the weeks; four who remained in the work only condition 70% of the weeks; and three who spent 30 to 38% of the weeks in the remain and work condition.

Figure 1 shows the experimental conditions in which three students were placed for each week of the semester. The three students are typical of three patterns of responding observed. Student-3 (Figure 1-A) responded in the baseline condition most of the semester. During the third week of the semester the student was experiencing the sign-in experimental contingencies (a. Figure 1). The student failed to meet the projection for that week and was moved into the next condition during week 4 (b. Figure 1). During week 4 the student met or surpassed projections and was moved back into the sign-in condition (c. Figure 1). The students typical of this group experienced contingencies similar to a totally self-paced course.

Student-7 (Figure 1-B) is representative of the remain and work group. Their performance is somewhat removed from the baseline group and indicates their preference for instructor set contingencies.

Student 4 (Figure 1-C) failed to meet weekly projections 12 of the 13 weeks. This student managed to complete one third of the required assignments during the final week of the semester, and received a "Credit" course grade.

FIGURE 1

Figure 2 shows the group rate of assignment completion. Students responded early in the semester with an increase in rate during the first ten weeks. The decrease in responding at Week 11 (a. Figure 2) occurred when students could only study on two days due to Thanksgiving vacation.

The experimental procedure offered five points on a self-pacing continuum. The students centered around three of these points, which may indicate their preference for instructor set contingencies.

The eleven students that completed the course by the end of the semester showed a mean time spent in the study area of 32.5 hours, with a range of 30 to 37.5 hours.

DISCUSSION

The procedure was successful in maintaining or shaping pacing behaviors in six students, when self-pacing was defined by performance in the baseline category. The procedure was less effective for four students in the remain and work category and virtually ineffective for the three students in the work only category.

The study was designed to offer five points on a self-pacing continuum. The behavior of the students indicated there were only three functional points. This may have been due to the design of the conditions which offered no clear advantage for experiencing the intermediate points on the continuum.

Figure 2 clearly indicates a lack of scallop behavior which is indicative of self-paced courses. In the present study, the students did not procrastinate, which may have made it more probable for them to complete the course by the end of the semester. The conditions produced a 15% "Incomplete" and "Withdraw" rate, compared to 25% in Lloyd & Knutzen (1969) and 30% in Shappard & MacDermot (1970).

One aspect of the procedure deserves further mention. The students were continually being notified of their course progression, since experimental conditions were being manipulated

on a weekly basis. In talking with these students, the authors noted the average rate data was information that many of the students could not calculate for themselves. In the form of speculation, low grade point average students may not be able to realistically assess their standing in a self-paced course because these skills are lacking. When they eventually do discriminate their situation, it is often too late.

In conclusion, the procedure proved effective for reducing procrastination. The small percentage of "W" and "I" students could be directly related to work begun early in the semester.

Further research should be carried out that will adapt a modified version of the present procedure and apply it to a university PSI course. The authors are currently investigating written and telephone prompts on unit completion in an introductory Psychology course. Information on course progression is being included in these prompts.

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EXPERIMENTAL CONDITION

BASELINE	SIGN-IN	SIGN-IN, REMAIN & WORK	REMAIN & WORK	WORK ONLY
30 non-contingent points daily.	30 points contingent on signing-in.	10 points contingent on signing-in. 10 points contingent on remaining for one hour. 10 points contingent on assignment completion.	10 points contingent on remaining for one hour. 20 points contingent on assignment completion.	30 points contingent on assignment completion.
	Meet projections ← Behind projections →	Meet projections ← Behind projections →	Meet projections ← Behind projections →	Meet projections ← Behind projections →
RATIONALE				
Establish an environment where pts. are used, and ascertain students need additional contingencies.	Shape behaviors (signing-in) which are point contingent.	Shape one hour study behavior and assignment completion. Fade signing-in pts.	Continue shaping one hour study behavior and assignment completion.	Entire emphasis is on assignment completion.

Table 1. Experimental conditions and rationale.

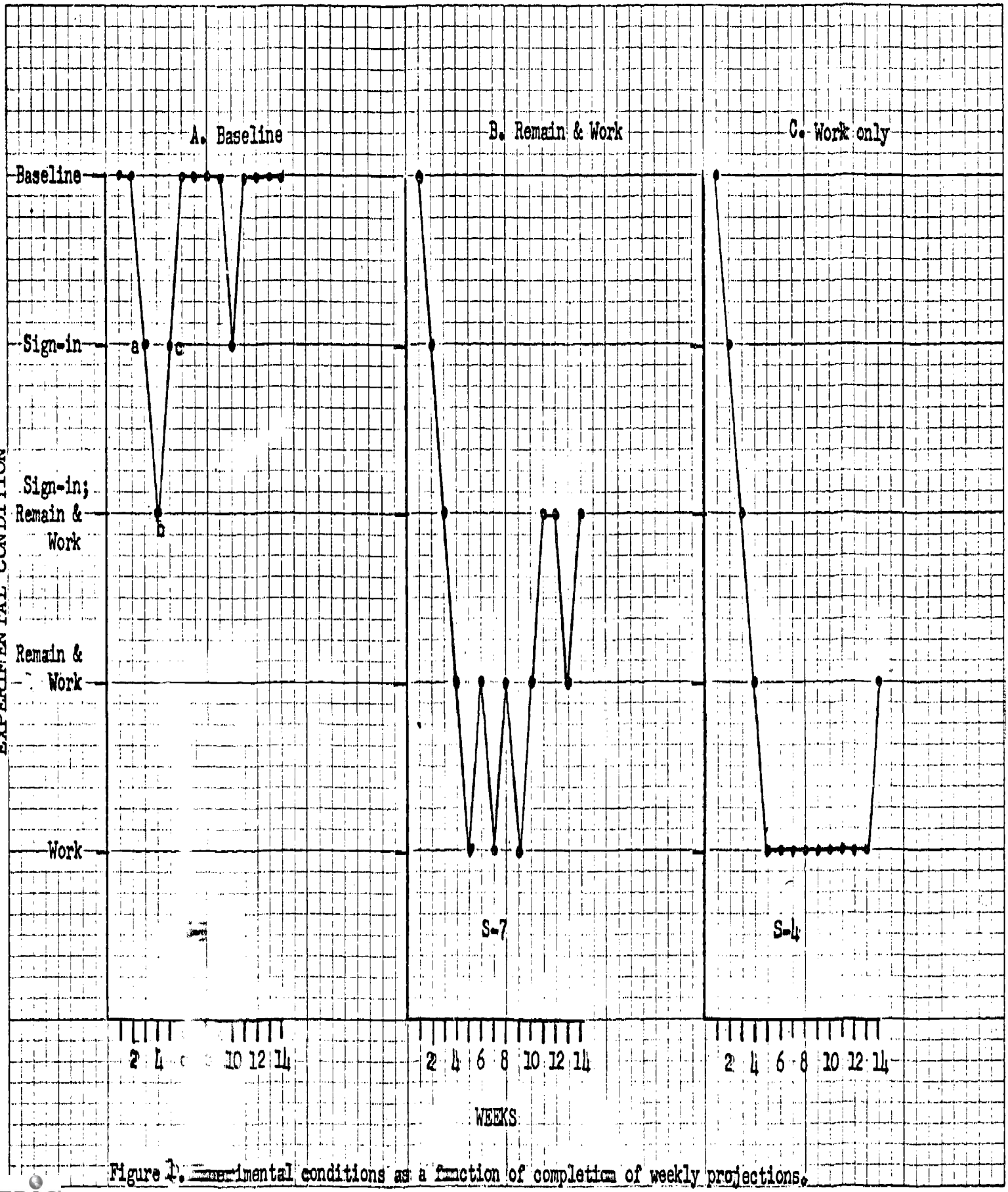

Figure 1. Experimental conditions as a function of completion of weekly projections.

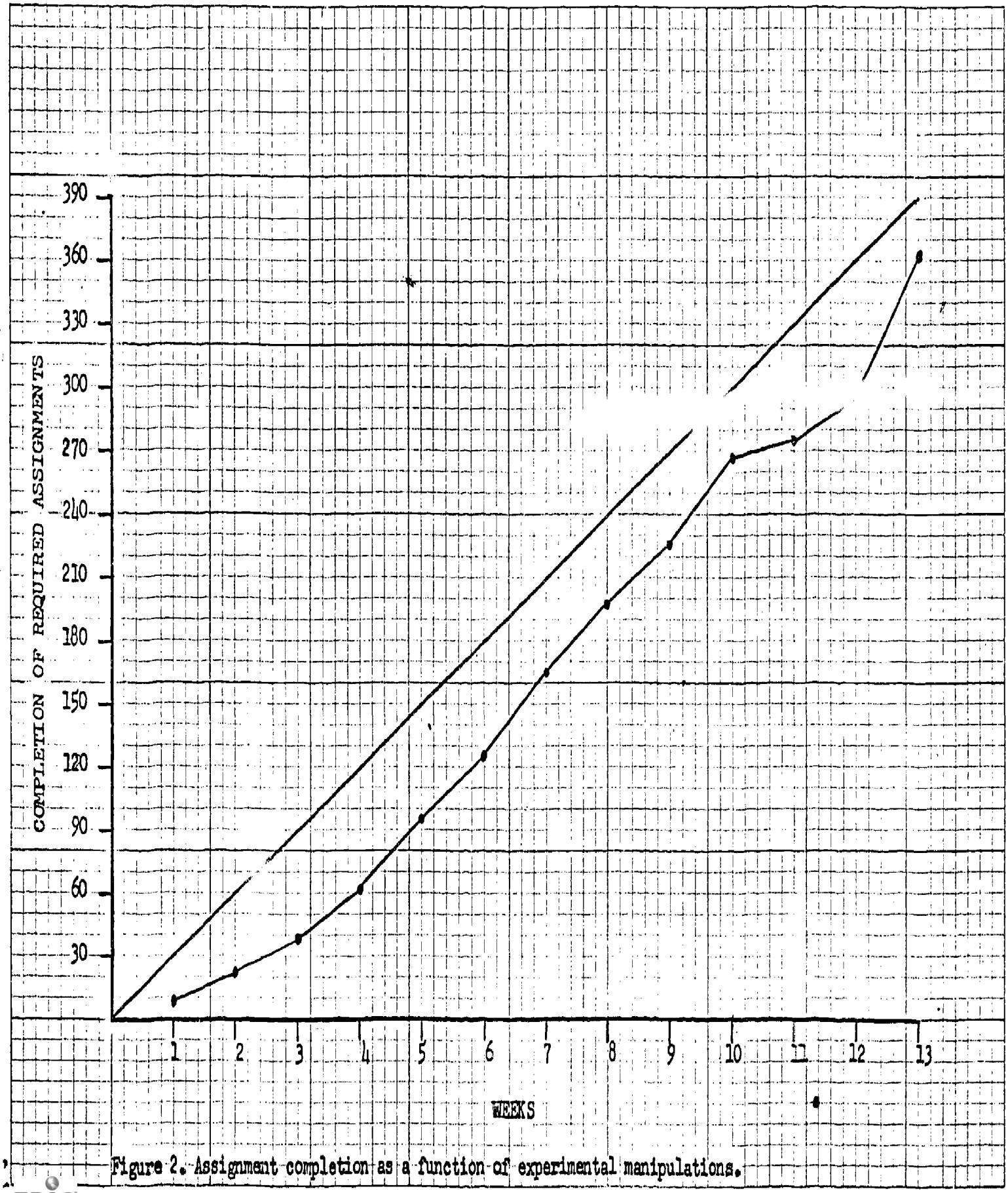

Figure 2. Assignment completion as a function of experimental manipulations.