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ABSTRACT

Entitled Project Success Environment and funded by Elementary Secondary Education Act Title III, the pilot 1970-71 study included eight experimental classes with appropriate comparison classes. Following this initial effort the program was expanded to include twice the number of students within a wider age range during the second year of operation 1971-72. A reasonably rigorous experimental design was also incorporated in the second year. The projects' purpose was to answer an actuarial question: Can behavior modification solve the referring social problem, which has been analyzed into two sets of behavior, those behaviors which are too high or too low in rate? The central question in this study is whether or not teachers can be trained to use the techniques made available through behavioral analysis to provide large number of students from economically disadvantaged backgrounds with some modicum of individual success. The emphasis has been on the training preservice and inservice) of teachers in the use of positive behavior modification. A contingency management technique was implemented in a large number of inner-city classrooms from first to eighth grade for an entire academic year. Further, some children participated in the project for two successive years, thus permitting some assessment of the longitudinal effects. (Author/JM)

ATLANTA PUBLIC SCHOOLS
Division of Instructional Services

Project Success Environment: A Behavior Modification Program for Inner-City Teachers

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Project Success Environment
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The Project Staff:

Mrs. Jean Bowen, Coordinator
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Mrs. Florence Rose - Fourth Grade

Mrs. Lucy Smith - Fifth Grade

Mrs. Eddie Storey - Fifth Grade

Whitefoord Elementary

Mrs. Patricia Brittain - Fourth Grade

Mrs. Betty Copeland - Second Grade

Mrs. Bertha Green - First Grade

Miss Patricia McCleese - Third Grade

Miss Sandra Meyer - Fourth Grade

Mrs. Joycelyn Wilson - First Grade

Coan Middle School

Mrs. Gwendolyn Ashmore - Sixth Grade

Miss Marshall Ann Barrett - Sixth Grade

Miss Elizabeth Brown - Sixth Grade

Mrs. Sheila Cross - Sixth Grade

Mrs. Patricia Godbee - Sixth Grade

Mr. Richard Goerss - Sixth Grade

Mrs. Jessie Jackson - Sixth Grade

Mr. James Lamar - Sixth Grade

Miss Barbara Westlake - Sixth Grade

The Project Principals:

Mr. Gene Chandler, Whiteford

Mr. Wilbur Leaphart, Coan

Mr. Robert Warren, Wesley

In addition, appreciation is expressed to Mrs. Mary Greene, Principal of Toomer Elementary School, and her faculty and staff, who introduced the PSE program into Toomer on a school wide basis in February of 1972. This represented the first planned effort to export the principal project-developed concepts. Further, appreciation is expressed to each teacher and principal who cooperated with the research thrust and assisted with the comparison data. This was — is — an important aspect of the comprehensive project design.

Without cooperation from pupils and parents no program of this nature could exist, let alone sustain itself over a three-year span. We are grateful for this support and understanding. Hopefully, pupils in future years will benefit from the knowledge and experience that has been gained from this effort.

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PREFACE

Pupils from a low socio-economic background, both black and white, are failing to gain an adequate education in the nation's central-city schools (e.g., Coleman, et al., 1966; Dittman, 1967; Kvaraceus, 1965; and McCandless, 1967, 1970). Regardless of their race, their ethnic group, or the part of the country from which they come, the educational achievements of educationally disadvantaged students have been repeatedly documented as dismal. As a group they fall further and further behind their economically advantaged peers with each year of schooling (e.g., McCandless, 1970).

A number of factors probably contribute to the academic plight of the inner-city child. Among other things such a child begins school poorly prepared to handle both the information presented by the teacher and the middle-class format of the classroom. As a result of his parents' attitudes, he may have inappropriate expectations about school and academic achievement. Further, he may receive little support or encouragement from important people in his environment.

In spite of these factors, some inner-city pupils do succeed in school. We think the few successful pupils experience academic success early and, finding such success rewarding, are motivated to undertake new academic tasks. Most inner-city students, however, experience early failure rather than success in school and consequently are poorly

motivated. Further, failure is compounded as time passes so that expectations of failure are inculcated.

If this etiology is valid, the one logical and humane course of action is to replace failure with success. In order to implement this course of action, project teachers are trained: (a) to emphasize success and minimize failure and (b) to provide opportunities for success by matching the material presented to the level at which each child functions.

In the present study, teachers were trained as outlined above to create a success environment in their classroom, thereby to give pupils successful experiences upon which to build. Teachers were trained in the use of a contingency management procedure with major emphasis on the reinforcement of appropriate behaviors (successes) and minimal use of punishment for inappropriate behaviors (failures).

A number of studies have already shown that contingency management can successfully be applied to the school setting. During the 1960's, many behavior modification studies were conducted in a classroom setting (Zimmerman and Zimmerman, 1962; Harris, Wolf, and Baer, 1964; Hall, Lund, and Jackson). Most of these focused upon objective assessment of individual pupils, according to Zimmerman, Zimmerman, and Russel (1969). Contrasting with the single pupil treatment, Birnbrauer, Wolf, Kidder, and Tague (1965) and Burchard (1965) demonstrated good results utilizing

behavior modification where they concurrently applied systematic treatment to every member of a class. Bushell, Wrobel, and Michaelis (1968) demonstrated that a set of common treatments could successfully be applied to a class as a whole; classroom assignments were not explicitly constructed for individual pupils but were designed so that different activities were reinforced by differential token reinforcement contingencies.

Several types of maladaptive behaviors have been modified or alleviated in pre-school or nursery school settings. Hart, Allen, Buell, Harris, and Wolf (1964) and Harris, Johnson, Kelley, and Wolf (1964) used social reinforcement to eliminate maladaptive crying behavior and regressed crawling. Hart, Reynolds, Baer, Brawley, and Harris (1968) studied and successfully controlled the obnoxious behavior of a 5-year-old girl who was "balky, verbally insulting, occasionally foulmouthed, and proved to tell disjointed stories about violent accidents." Buell, Stoddard, Harris, and Baer (1968) conditioned a young preschool child who was physically inactive and withdrawn to develop social skills by reinforcing outdoor play. Baer (1966) notes a number of other studies, all having positive outcomes, involving behaviors such as excessive dependency, wild and disruptive social play, extreme aggression, exclusive play with single peer, inattentiveness, inarticulate use of language, and hyperactivity.

Recently the aim of behavior modification studies in classrooms has been shifted from disruptive pupil behaviors to pupil achievement. Staats (Staats and Butterfield, 1965; Staats, 1964a; Staats, 1964b; Staats, Finley, Minke, and Wolf, 1964a; Staats, Minke, Finley, Wolf, and Brooks, 1964b) performed a series of studies demonstrating significant gains in reading achievement utilizing token reinforcers. Staats reported that the token reinforcement system was very successful in motivating pupils to read. Wolf, Giles, and Hall (1968) repeated Staats' dramatic results and demonstrated overall achievement gains in a remedial classroom, compared with the achievement gains of a regular classroom (control class) by using a token reinforcement system. Significant improvement in reading achievement as measured by standard reading tests, was reported by Clark and Walberg (1968), where massive verbal rewards were given by the teacher and these rewards were recorded by each child on tally sheets. Clark and Walberg demonstrated that in an educational setting "the teacher's increased use of verbal praise has a positive effect on the scholastic learning of children who are potential dropouts from inner-city schools (p. 310)."

In classroom settings, then, two general classifications of reinforcement contingencies have been explored, social and token reinforcement. Praise, teacher attention, teacher smiles, and teacher frowns were found to provide adequate incentives for most pupils to perform

effectively in classrooms (O'Leary, Becker, Evans, and Saudargas, 1969; Zimmerman and Zimmerman, 1962; Harris, Wolf, and Baer, 1964; Harris, Johnston, Kelley, and Wolf, 1964; Allen, Hart, Buell, Harris, and Wolf, 1964; Becker, Madsen, Arnold, and Thomas, 1969; Hall, Lund, and Jackson, 1968; Scott, Burton, and Yarrow, 1967; Ward and Baker, 1968; Hall, Panyon, Rabon, and Broden, 1968; Barclay, 1967; Madsen, Wesley, Becker, and Thomas, 1968). Social stimuli are defined as the behavior of people, including such functions as physical contact, nearness, verbal behavior, and physical appearance. Where social approval or the use of teacher praise and social censure have failed, token reinforcement has proved to be effective in modifying pupil behavior (Birnbrauer and Lawler, 1964; Birnbrauer, Wolf, Kidder, and Tague, 1965; Birnbrauer, Bijou, Wolf, and Kidder, 1965; Quay, Werry, McQueen, and Sprague, 1966; Kuypers, Becker, and O'Leary, 1968; O'Leary and Becker, 1967; Wolf, Giles, and Hall, 1968). Token reinforcement has been defined by O'Leary and Becker (1967, p. 637) as "tangible objects or symbols which attain reinforcing power by being exchanged for a variety of other objects such as candy and trinkets which are back-up reinforcers. Tokens acquire generalized reinforcing properties when they are paired with many different reinforcers." The most powerful combination of incentives to modify pupil behavior in the classroom appeared to be a systematic blend of social and token reinforcement.

With reference to the present study, the following points should be made. First, it has been clearly demonstrated (and our own observations made early in the course of conducting this study confirm) that on the whole teachers of inner-city pupils employ negative and even punitive methods as their major incentive technique for behavior control and academic learning. Second, it is also clear that behavior modification is not necessarily a positive technique but can be, and often is, accomplished by means of aversive incentives. Third, most of those reporting in the literature, either themselves or by way of specialists trained by them, have been interested in whether or not the behavior modification technique worked but less interested in developing procedures for training classroom teachers in its use.

In this study we have worked to move teachers from the employment of a preponderance of negative to a preponderance of positive incentives. Appropriate behavior is rewarded, inappropriate behavior is ignored, and almost no aversive incentives are used. Second our emphasis has been on the training (preservice and inservice) of teachers in the use of positive behavior modification rather than on the utilization of specialists. Further, most behavior modification investigators who have reported in the literature have worked with individual students or small groups for limited periods of time, such as six weeks. In the present study a contingency management technique was

implemented in a large number of inner-city classrooms from first to eighth grade for an entire academic year. Further, some children participated in the project for two successive years, thus permitting some assessment of the longitudinal effects.

As a group study, Project Success Environment was not designed as an exercise in scientific analyses of behavior. Its purpose, rather, was to answer an actuarial question of the sort suggested by Baer (1971): Can behavior modification solve the referring social problem, which has been analyzed into two sets of behavior, those behaviors which are too high or too low in rate? The central question in this study is whether or not teachers can be trained to use the techniques made available through behavioral analysis to provide large numbers of students from economically disadvantaged backgrounds, with some modicum of individual success.

Entitled Project Success Environment and funded by Title III monies, the pilot 1970-71 study included eight experimental classes with appropriate comparison classes at the first, second, third, and seventh grade levels. Following this initial developmental effort and its encouraging results, the program was expanded to include twice the number of students within a wider age range during the second year of operation, 1971-72. A reasonably rigorous experimental design was also incorporated in the second year.

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YEAR I 1970-1971

The major goals of the initial funding year of the project (1970-1971) were (1) to develop and test a program (the Success Technique) designed to reduce the level of disruption in inner-city classrooms and to increase student involvement in assigned academic tasks and (2) to develop effective procedures for training teachers in the use of the Success Technique. The staff hypothesized that if teachers had adequate control over children in inner-city classes academic performance would also be enchanced; clearly, learning cannot occur in a disorderly, unmotivated class.

The success technique actually evolved over the entire first year. A rudimentary program, designed during the summer of 1970, was revised in trial-and-error fashion over the 1970-1971 academic year as data was obtained on the effectiveness of the procedures. The technique described below represents the status of the program at the end of the first year. This program consisted of a reinforcement system designed to deliver a high rate of reinforcement for appropriate social and academic behaviors, a classroom arrangement designed to foster small group and individualized teaching, and some revision of the standard curriculum. In addition, the teacher of each project class was assigned an assistant teacher who was also trained to use the technique. In this first year the staff believed that the technique could not be implemented without

additional help for the teacher. This entire package was evaluated as a single entity in relation to control classes using a traditional teaching approach and a single adult per class; thus, we cannot demonstrate the relative contribution of each component to changes in student performance. Finally, because the effectiveness of the Success Technique could not be assessed unless teachers were applying the procedures appropriately, an attempt was made to assess systematically and objectively whether teachers applied the requisite procedures, primarily high rates of reinforcement and low levels of punishment.

Method Year I

Subjects and Design

The subjects attended four inner-city schools, a middle school and three of its feeder elementary schools, in the Edgewood-Kirkwood section of east Atlanta. This section is a typical inner-city (not hard-core) black community. Substandard educational achievement levels and a high proportion of families earning less than $3,000 per year are characteristic of the area. All pupils in the project were black; there were approximately the same number of males and females. The mean IQ for the elementary students was 84; for the seventh grade students it was 72.

The subject population consisted of approximately 600 students making up three groups: an experimental group, a

proximal control group, and a distal control group. The distal group was intended to control for possible spread of the treatment effect within the experimental schools. The experimental group consisted of 75 seventh grade students (three classes of 25 each) attending Sammye E. Coan School, 50 third grade students (two classes of 25 each) attending Wesley Avenue Elementary School, 25 second grade students (one class) attending Whitefoord Elementary School, and 50 first grade students (two classes) also at Whitefoord Elementary School. At each of these three schools a like number of classes were used as proximal control classes. The distal control group was located in a neighboring school, C. D. Hubert Elementary (contains grades K-8) and consisted of eight classes: three seventh, two third, one second, and two first grades.

The elementary classes were self-contained, and the elementary pupils were exposed to the behavioral contingencies throughout each school day. The middle school classes, however, were taught by teams (three teachers per team in the sixth grade and four in the eighth grade) so that the pupils were exposed to the contingencies for approximately four hours daily during the mornings while attending the basic classes taught by the experimental teachers--reading, mathematics, social studies, and, in the eighth grade, science. During the afternoons, the middle school pupils attended non-experimental exploratory classes, such as music, art, and home economics.

The success technique was not introduced by the teachers into the experimental classes until the first week in October. This provided a baseline period for within-subject analysis.

Teachers and Assistant Teachers

Eight teachers volunteered for participation in the project for the first year. In addition, each project teacher was assigned a full time assistant teacher. All assistant teachers had completed at least one year of college. An equal number of proximal (at the same schools) and distal (at Hubert Elementary School) teachers were selected to serve as controls. The race and sex of all teachers at each grade level are presented in Table 1.

TABLE 1

Experimental Design Year I

	Experimental		Proximal		Distal	
	sex	race	sex	race	sex	race
Grade						
1st Teacher	F	B	F	W	F	B
Assistant teacher	F	W				
1st Teacher	F	B	F	B	F	B
Assistant teacher	F	B				
2nd Teacher	F	B	F	B	F	B
Assistant teacher	F	B				
3rd Teacher	F	B	F	B	F	B
Assistant teacher	F	B				
3rd Teacher	F	B	F	W	F	W
Assistant teacher	F	B				
7th Teacher	F	B	F	B	F	B
Assistant teacher	M	B				
7th Teacher	F	B	F	W	F	B
Assistant teacher	M	B				
7th Teacher	F	B	F	W	F	B
Assistant teacher	M	B				

Project Staff

Management of Project Success Environment during Year I was accomplished through the services of a Project Director, two Project Coordinators, a Research Assistant, and two part-time Behavior Technicians. The Project Director facilitated the development and implementation of the

program in conjunction with the Superintendent, the Assistant Superintendent for Instruction, the Area V Superintendent, and project consultants from Emory University. The two Project Coordinators worked directly with the elementary and middle school principals in the training and supervision of the project teachers and in obtaining necessary equipment, supplies, and instructional materials for the project classrooms. The Research Assistant was responsible for the experimental design and evaluation of the program and worked closely with the Assistant Superintendent for Research and Development and the project consultants. The Behavior Technicians monitored and supervised the implementation of the success technique in the classroom and oversaw collection of the in-class observational data.

Treatment

The success environment technique utilizes behavior modification with the emphasis on positive reinforcement. Three principal components are: (1) a reinforcement system; (2) a classroom arrangement (an engineered classroom); (3) a curriculum. Because these three interacting components were applied concurrently so that no individual appraisal was feasible, they are evaluated as a single entity.

Reinforcement System

In a Project Success classroom, the burden of reinforcement falls upon the project teacher. It is essential to the success technique that the teacher reinforce her students often. Frequent reinforcement is hardly sufficient, but it is necessary to combat the sense of failure that the inner-city student associates with the classroom. The teacher does not reinforce haphazardly. Reinforcers are presented to the students as soon as possible following desired behavior, and the teacher makes it clear to the student what he has done to earn his reward. In brief, the teacher reinforces her students frequently and with purpose. Sometimes the purpose is only to improve the student's attention or his conduct, but often the intent is to increase the response strength of behaviors which indicate that learning has occurred or is occurring.

To speak of "behaviors which indicate that learning has occurred" is to become involved in the difficult problems of determining behavioral objectives. Traditionally these problems have been dealt with as an aspect of curriculum preparation. This is still the case within the success technique, but another element is added. The objectives, and the curriculum leading the student to the objectives, are selected to allow the project teacher frequent opportunities to monitor and, if appropriate, to reinforce the student's progress. An outline of the project's various curricula, designed to afford the teacher these opportunities, is presented in a separate section. The significant point to be

made here is that establishing effective reinforcement contingencies cannot be separated from, and is in fact dependent upon, preparing a highly structured curriculum.

The administration of reinforcement is the essential means for accomplishing three project goals. (1) The inner-city student usually has a history of failure, especially in the school. It is not unusual for the school itself to be viewed as an ever present symbol of failure. Reinforcement achieves the first goal of repeatedly giving the student an immediate sense of success and an accompanying positive feeling toward school in general and his own teacher in particular. (2) Further, if the reinforcements are administered properly, the student feels he has earned them, thus has coped effectively with his environment. (3) Finally, as the student comes to feel successful and efficacious in the success classroom, the reinforcement is also providing direction and motivation for learning skills and behaviors that will help the project student in other classrooms in other environments.

Goal 3 is very close to the traditional aim of education. That Goal 3 is also the ultimate purpose of administering reinforcement is appropriate, therefore, but hardly innovative. The unique aspect of this approach is the emphasis on attaining goals 1 and 2 as an integral part of attaining goal 3. The emphasis on engendering feelings of positive affect and competency is only appropriate if it is granted that students do not normally associate these

feelings with their classrooms. The admitted project bias is that failure, not positive affect and a sense of efficacy, pervades very many classrooms, especially in the inner-city.

In Operation. The approach held in mind while administering reinforcement is to accomplish our three goals sequentially. That is, the students are first induced to associate their classroom and their teacher with pleasant things. Reinforcement theory indicates that when this state is reached the students are likely to be interested and active. They are then given opportunities to bring about the occurrence of pleasant consequences through their own efforts. A sense of efficacy is rewarding in itself and, together with the reinforcement received, increases the response strength of purposeful behavior. Up to this point there has been no direct concern with what academic material the student has mastered but rather with whether or not he has learned that following the rules and "playing the game" pays off. If things are going well, the student is now looking for ways to earn reinforcement; and the teacher can concentrate more on teaching subject matter and reinforcing a demonstrated mastery of the material covered. The following procedures were employed sequentially in order to put the reinforcement system into operation.

A. Day One. Because the typical classroom and its trappings are associated with failure in the students' minds, from first day of school classes would have

been housed in geodesic domes, have been seated in dugouts, and never, but never, have been offered a textbook if it were possible. Since it was not possible to replace the typical classroom, the next best approach was to change its image.

On the day the technique was initiated, things were done to make the students aware that the school had changed. Many innovations were optional, depending on teacher preference. For example, some teachers chose simply to tell their students to come in and sit down: "This class will be different from any you have been in before." Most of the teachers, however, rearranged the desks, usually into a U-shape. In every classroom, a set of four or five classroom rules of order, drawn up by each teacher, was displayed and explained. The several interest stations which are part of project classrooms were put into operation and further served to alter both the appearance and the routine of the class. Most important, the reward system was introduced.

There was no essential difference in the initiation of the reward system within all project classes, although checkmarks on special cards were used in the elementary grades and tickets were given to students in the middle school. On day one, the students were first rewarded for simply coming to school, again for sitting in their seats, then for following whatever

directions the teacher chose to give next. She was free to reinforce correct academic behavior on the first day if she wished, but on the first day - indeed for the initial six weeks - a strong emphasis was placed on reinforcing desirable student conduct, particulary attention.

For the teacher, the first day was the hardest. She needed to reinforce every student several times for appropriate behavior and to be certain that the students knew what they were doing to earn their rewards. As the students learned the system and the benefits available for playing the game on succeeding days, they came to follow directions more easily, and this reduced some of the burden on the teachers. Also, after the first week or two, the quantity of tokens distributed each day could be gradually cut in half. A large daily quota of reinforcement remained, nevertheless. This quota became stable for the remainder of the year, although a shift in reinforcement emphasis, from conduct to academic performance, gradually took place.

Throughout the initial day of operation, whenever a student received token reinforcement (ticket or checkmark) he also received an M & M or a small piece of hard candy which he could eat immediately if he wished. Pairing candy with the tokens was continued for several days in some classes; however, the consensus

was that one day was sufficient, perhaps only one hour. The initial pairing of a token with candy accomplished several purposes. It made the inaugural day of the success technique different, interesting, and fun for the students. Through association with the candy, a primary reinforcer, the tokens themselves immediately took on a positive value, even before they were obtained in any number and exchanged for a reward (the rewards and their token prices were pictured on posters in all the classrooms). The teacher's image also benefited by her association with the candy, which is generally a very positive stimulus for a brief period of time. Instead of being viewed as foreman of the salt mines, boss of the yard gang, and giver of the great red X's, the teacher obtained a Santa Claus image and got a head start toward a warm relationship with her class. Her presence began to signify imminent goodies. Her directions and requests represented opportunities for still more goodies.

Enough tokens were distributed the first day for most of the students to have the option of either exchanging them for a reward or saving for something more costly. It was the teacher's job to make sure that every student had accumulated enough tokens in two days to have this option. To do this, the teacher sometimes had to lay in wait for a difficult student to behave in a manner meriting reinforcement. It is essential to any

contingency management system that the subjects both understand that rewards are available for their tokens, and make the exchange and actively sample them. Sometimes pains must be taken to encourage students to exchange, but no problems of this nature were reported by our teachers.

B. Daily Routine. After the first day, tokens did not fly quite so thick and fast. But the first-day technique of pairing considerable reinforcement with the new materials and routines in order to make them attractive and teach their use quickly was repeated many times during the remainder of the school year. When introducing anything new that required added initial attention and effort from the students, the object was to make the event possible. The students were to think, however vaguely: "There's something in this stuff for me. I can use it to get something I want." We hoped that once the students began working the curriculum would become intrinsically interesting as well.

The daily routine in project classrooms differed considerably between the elementary and middle schools. In the elementary grades the teacher reinforced her pupils with checkmarks and social praise at the end of each teaching segment (about 25 minutes). Each pupil could earn a maximum of four checkmarks during each

period for having worked diligently and accurately at his assigned task. The middle school teachers reinforced appropriate behavior randomly, using tickets paired with social praise.

"Random reinforcement" is an oversimplified description of what went on in the seventh grade classrooms. For example, whenever the teacher introduced new material and/or a new task, she immediately reinforced the first two or three correct responses from every student. The immediate feedback facilitated learning and, again, made the material more appealing. After the first several responses, the teacher gave fewer tickets but continued to give verbal praise for every correct response. She paired tickets with the praise, first at regular intervals and then more and more infrequently. The teacher soon abandoned both praise and tickets on a predictable basis. In most cases, she never ceased entirely to reinforce the desired behavior, but the reinforcement was intermittent and unpredictable. At this point it was more accurately a random reinforcement system.

The one aspect of the curriculum that never came to be reinforced randomly was the order tasks. Students were given order tasks (described later) to complete at the beginning of the first period every morning and occasionally at the beginning of the second and third periods, depending on the teacher's

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preference. They were always reinforced for successful completion. The purpose was to warm the student up with a simple task at which he could always succeed. Thus, at the beginning of every day the student was successful, just as he had been on the first day of school.

The significance of teacher praise as part of the daily routine deserves mention here. For many students, the technique could operate on the teacher's verbal praise alone, without tokens. The single most important operating rule of the technique is "ignore and praise." For instance, unless someone is getting hurt, the teacher focuses her attention on the students near the offender who are working well. She praises them for working or paying attention and possibly presents a token also. In this way, she prompts the correct behavior in the student who is misbehaving. Her praise of the attentive students should be warm and genuine. It is amazing how a teacher's words can tell one student he is doing well and her tone of voice imply criticism of another student misbehaving nearby. Criticism is avoided. It is deemed quite important to check correct answers and leave mistakes alone, instead of Xing errors and ignoring the right answers. The student can determine where he was incorrect, but he can also feel successful for getting some right - and the more right, the more reinforcement he receives.

Many of the teachers ask the student to try the units not checked as correct again and then help the student until all the answers can be checked correct. directions, with little emphasis placed on correct answers. On succeeding days, mastery of the subject.

As described above, on the initial day the teacher reinforced obeying the class rules and following directions. On succeeding days, mastery of the subject matter gradually acquired more and more significance. A reinforcement procedure consistent with this approach was implemented. During the first weeks of operation, the students were first reinforced for beginning an assigned task, again for working hard and completing it, then a third time for the quality of their work. Some students received token reinforcement and teacher praise on all counts from the beginning. Many others were inaccurate in their responses; some never finished; and occasionally someone avoided a task completely. Every student who made any attempt was reinforced and praised at least once. All the students soon began to make an effort. When the teacher believed that everyone had learned to get started, she ceased to reward starting with tokens, relying briefly on praise alone, then finally withdrawing her praise. Later, when the teacher thought that everyone was working to completion, she followed the same procedure for fading out the use of reinforcement. The original plan was to continue to reinforce starting, working hard, and

completion in a random manner, concentrating on a few students having difficulties. However starting and completing never developed into problems after the first few days and were not reinforced again. Working hard was subsequently reinforced whenever a student encountered difficulty in attaining mastery. The teacher never stopped reinforcing mastery, but she did come to administer the tokens intermittently.

It is strongly desirable that reinforcement be immediate and necessary that it be appropriate. Therefore, evaluating performance immediately, before handing out reinforcement, was essential. The teachers did this in several ways: They would go to a student at work and quickly spot-check a few items at random. If the items were right, reinforcement was given; if too many were wrong, encouragement and a promise to return were offered. In variation, the student completed a few items as the teachers watched. In the third and seventh grades, students exchanged their tokens for the opportunity to be a mini-teacher. One of the mini-teacher's roles is marking the work of other students. To do this, the mini-teacher uses his own paper that the teacher has first inspected, correcting any incorrect responses. Free from marking all but one paper, the teacher comes by later, quickly glances at the checked papers, and administers appropriate reinforcement.

Often the reinforcement was not tokens but an opportunity for the student to go to an interest station (of his choice, if possible) and either remain there for a time or bring something interesting back to his desk. With the successful students so entertained, the teacher was able to work with those having difficulties. This use of the stations prevented students who finished quickly from being "rewarded" by boredom or even more work. Boredom or plain idleness was always a problem, probably the single most difficult problem for the teacher to handle. Each teacher was instructed never to keep her back to the class, to be mobile, and to recognize raised hands at once if only to assure the student that she would be there shortly.

Teacher-constructed tests were given, the correct answer checked, the tests given back, and the students rewarded for work of good quality. But the delay inherent in this traditional procedure detracted from its usefulness as part of the technique. Long tests were discouraged at the beginning of the year until the students understood the advantages of producing the right answers better.

Rules of Thumb. During the summer training session, the project teachers studied reinforcement theory. Aside from the techniques discussed above, they entered the classroom in the fall armed with several "rules of thumb." These had

been culled from work by Becker, Thomas, and Carnine (1969). The teachers followed them during the year, and a description of the reinforcement procedures is incomplete without their inclusion:

1. Specify in a positive way the rules which are the basis for your reinforcement. Demonstrate the behaviors you desire by praising the children who are good examples of following the rules. Rules are made important to children by providing reinforcement for following them. Keep the rules to five or less. As the child learns to follow the rules, repeat them less frequently, but continue to praise good classroom behaviors.

2. Relate the children's performance to the rules. Be specific about the behaviors children show which mean "paying attention" or "working hard." "That's right, you're a hard worker." "You watched the board all the time I was presenting the example. That's paying attention." "That's a good answer. You listened very closely to my question."

3. Catch the children being good. Reinforce behavior incompatible with that you wish to eliminate.

4. Punishment will most likely be required when the unwanted behavior is very intense (so that there is some potential danger to self or others), or

very frequent (so that there is positive behavior to work with).

5. If punishment is necessary, first try isolating the child. The child should remain in the time-out room until he is quiet for several minutes. Give one warning prior to the use of time out, so that the warning signal can be used most of the time as a punishment without the need for time out.

6. Any use of punishment should be accompanied by the use of reinforcement of behaviors incompatible with the punished behaviors.

Rewards. The determination of rewards to be used in Project Success classes during the first year received a great deal of attention during the summer workshop, and a list of rewards was developed before the end of the summer. A mechanism of exchange was also developed in advance of the initiation of the treatment so that once an elementary school child filled a success record card or a middle-school student earned a certain number of tickets, he could indicate whether he wanted to trade (cash in) for an immediate reward or save (delay) for a larger reward. The rewards were tangible items (e.g., candy and toys) and non-tangible items (e.g., going to the playground, leading the line). In the early months of the project (October-December) children at all grade levels selected tangible rewards exclusively. All food items were phased out of the reward

system at all grade levels in early January. A second step, made in late January, was phasing out the remaining tangible rewards and switching to supervised "free time" and other non-tangible rewards exclusively.

Classroom Arrangement

The classrooms used in the project are typical self-contained classrooms. Six of the classrooms are housed in portable buildings, one second grade class and two third grade classes in the elementary school and three seventh grade classes in the middle school.

The success classroom is divided into five major interest stations and a mastery center where academic assignments are handled. A floor plan of the success classroom is presented in figure 1.

The pupils' desks are arranged in three groups in the mastery center and assignments are given here in reading, written language, and arithmetic according to the pupils' ability and achievement. Also as a part of this center are two study booths which are used by pupils for academic work where they are able to work free from visual distraction.

The use of the interest stations is as follows:

The exploratory station is set up on a table where science activities are undertaken. Science is viewed as an extremely useful exploratory activity because of the opportunity it affords for multisensory exploration and reality testing.

The art station provides the pupils with two types of experiences in art, one that is coordinated with his academic work and the other which is less structured and allows the pupil a greater degree of self expression.

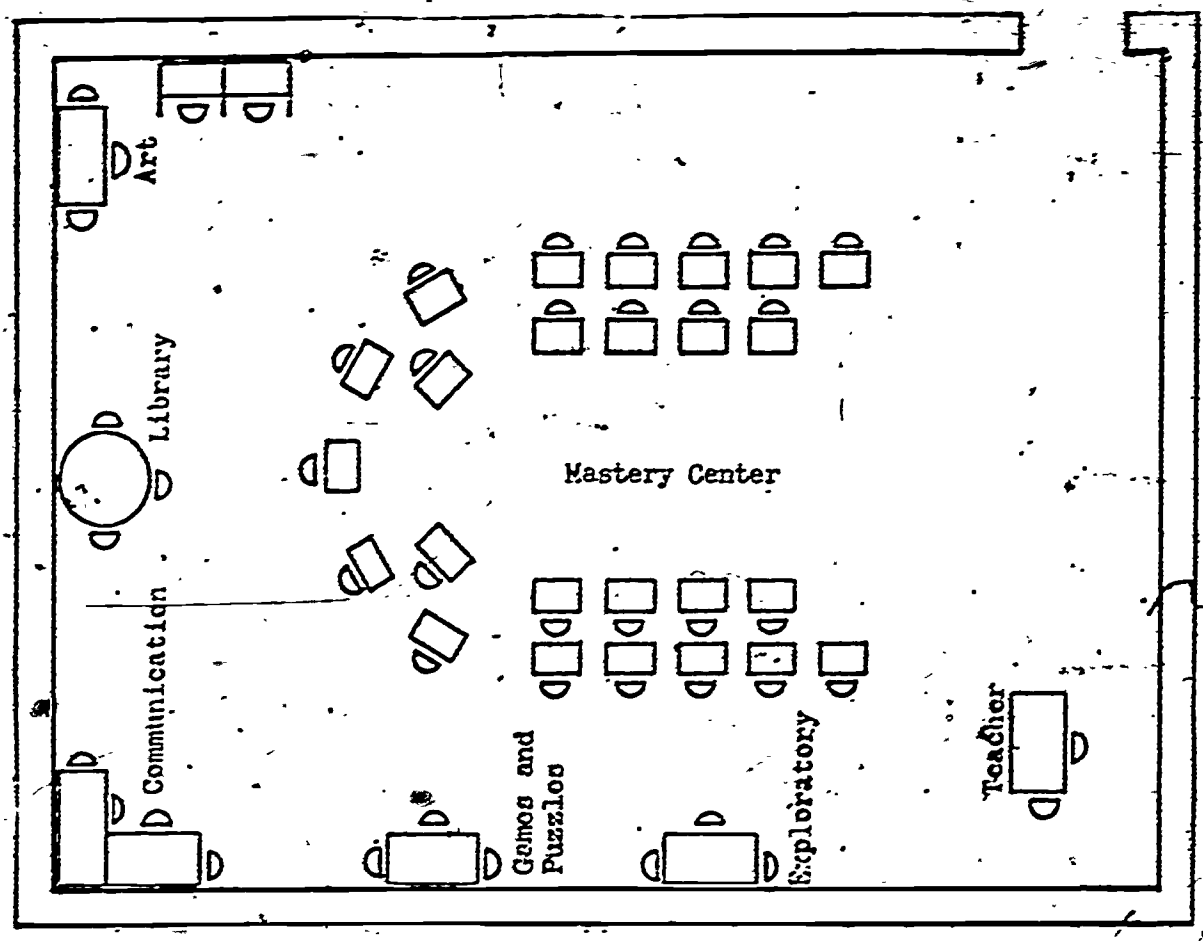
The communication station is designed to foster social interaction and development of cooperative behavior. The language master, record player and tape recorder are included in this area where one or more pupils may engage in listening to music and story records.

The library station provides the pupils with books, magazines, newspapers, and other printed materials.

The games and puzzles station is set up to provide the pupils with exercises emphasizing attention, orderly response and routine activities.

Figure 1

Floorplan of a Success Classroom



Typically, Project Success Environment classes were divided into three groups of students. The three groups rotated every 20 to 30 minutes from the interest stations to seat work on skills, to instruction with the teacher. To help the teacher keep track of the rotation, there were two cardboard wheels in each classroom. One wheel was divided into three sections and when rotated would assign each group to either skills, instruction with the teacher, or to work at interest stations. By turning the other wheel the teacher signaled to the group already assigned to the stations which station each student in that group was to go to.

Curriculum

The standard curriculum employed in the Atlanta Public Schools was modified slightly for use with the reinforcement system described above. First, curriculum materials were selected at levels appropriate to the three groups in each class. Second, an attempt was made to subdivide the curriculum in each content area to create modules that could be completed, evaluated, and reinforced daily. For example, children were given skill sheets providing daily practice in each subject area that permitted immediate evaluation, feedback, and reinforcement. In addition to the modified standard curriculum, the Sullivan Reading program was added at every grade level. This program also provided materials at several levels and opportunities for frequent evaluation and feedback.

Finally, the children in project classes often started the school day with a short task requiring only that they follow directions. Commercially available perceptual - motor work sheets were used along with simple tracing, design copying, and visual discrimination tasks. These order tasks were designed to get the students involved early in the day with a simple task almost certain to be completed successfully.

Summer Training

The workshop was conducted by three psychologists and three educators and was designed not only to provide instruction in the theory and practical application of operant conditioning but also to involve the teachers in planning for the classroom implementation of behavioral management procedures and various curricular activities.

During the mornings, the teachers participated in discussion sessions focusing primarily on readings in behavior modification from Teaching: A Course in Applied Psychology (Becker, Englemann, and Thomas, 1971) and other sources. The teachers then had an opportunity to apply behavioral management principles in classroom settings under the observation of their peers. These practice sessions were recorded on videotape and served as bases for further discussion in classroom management. The teachers were also exposed to systematic classroom observation by collecting data in actual classrooms using the procedures and forms that trained observers would use later in their classrooms. In addition, each teacher shared in the identification of the pupils' behaviors to be modified during the following year and in the establishment of a token economy to support the behavior modification effort.

The afternoons during the workshop were devoted to curriculum planning, especially for the initial weeks of school. Emphasis was placed on the formulation of behavioral

objectives for pupils, the employment of individualized instruction techniques, the use of programmed reading materials and academic diagnostic instruments, and the establishment and maintenance of a specific classroom arrangement. discussion of which follows).

Throughout the year, an experienced behavioral management technician was available at least twice weekly to assist each teacher with current problems in classroom management. Individual inservice sessions concerning curriculum implementation were also conducted weekly by two curriculum coordinators, one of whom concentrated on the elementary curriculum and the other on the middle school curriculum.

Measures

Of Pupil Variables

The effects of the experimental treatment on the project pupils were measured in four general areas: (a) student behavior; (b) academic achievement; (c) attitude toward self and school; and (d) academic aptitude. The following instruments and procedures were employed to assess the experimental effects.

Student behavior was measured by means of:

1. In-Class Observations In-class observations of students produced data on student attention and disruption. Within a 40 to 50 minute period, the

observers gathered data according to the following instructions:

a. Attention: There are 3 states of attention, uninvolved (UNVO), medium (MED), and involved (INVO). Ideally a child is observed to be either involved or uninvolved in his academic work. The medium category is for cases where this is difficult to determine. A student is observed for 2 or 3 seconds, his state of attention marked, and the observer proceeds to the next student until the entire class has been observed. This procedure is repeated 10 times (10 runs through the class) each day and requires approximately 20 to 25 minutes. Per cent involved is calculated excluding the medium category.

b. Disruption: (See below for observation procedures)

1. Talking Out - TO
2. Out of Seat - OS
3. Loud Noises - LN
4. Physical Contact - PC
5. Making Faces - MF
6. Others - O - for example, throwing something

c. Reinforcement - RFCT: Anything reinforcing or rewarding obtained by the student from the teacher or assistant teacher is marked down as reinforcement. This includes verbal and tangible rewards as well as physical contact and the granting of privileges.

d. Punishment - PUN: Same as above for verbal and physical punishment as well as the loss of privileges and time out.

Disruption, reinforcement, and punishment are observed simultaneously among a group of 5-8 students for a period of exactly 5 minutes. All disruption, reinforcement, and punishment that occurs among this group of students is marked for the appropriate student. Another group is then conveniently selected (probably selection is easiest row by row) for another 5 minutes; and the procedure is repeated four times (five for a large class) or 20 minutes until all the students have been observed. (Copies of the in-class observation forms are in Appendix A.)

2. Average Daily Attendance: Attendance data were obtained from official school records and average daily attendance (per cent of total possible) was calculated each month.

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2. Average Daily Attendance: Attendance data were obtained from official school records and average daily attendance (per cent of total possible) was calculated each month.

3. Average Daily Tardiness. Tardiness data were also obtained from official school records and average daily tardiness (per cent of total possible) was calculated each month.

Academic achievement was measured by the Metropolitan Achievement Tests (MAT). Because the Metropolitan tests have been adopted for city-wide testing in the Atlanta School System, they were selected as the base instrument for measuring gain in academic achievement. The complete batteries for appropriate grade levels were administered, but only reading and math subtests were evaluated.

Attitude toward self and school was measured by the following instruments:

1. Coopersmith Self-Esteem Inventory, Form B. The Coopersmith is a measure of self-concept that is commonly used with school-aged subjects.
2. Crandall Intellectual Achievement Responsibility Questionnaire. The children's form of this instrument contains 34 forced-choice items in which the stem describes either a positive or a negative achievement experience that routinely occurs in school (Crandall, Katkovsky, & Crandall, 1965). The stem is followed by one alternative stating that the event was caused by the child, and another that says the event occurred because of the behavior of someone else in the child's immediate environment. A child's

positive internal score is obtained by summing all positive events for which he takes credit; the negative internal score is obtained by summing all negative events for which he assumes blame. The questionnaire was developed by Virginia C. Crandall and others.

3. Pitt Attitude Toward School Questionnaire. Pitt's original scale contains yes/no items evenly spread through the whole range of opinion from extreme liking to extreme disliking for school. Values are assigned to each item of the scale. The scale-values range from 0, which corresponds to extreme liking (I like school better than anything else."), to 10.5 that corresponds to extreme disliking ("I hate school more than anything else."). The score is obtained by calculating the mean of the scale-values of the statements with which the subject agrees.

Academic aptitutde was assessed by the California Test of Mental Maturity - Short Form. Appropriate levels of this well-standardized group IQ test were administered.

Of Teacher Variables

The effects of the experimental treatment on the project teachers were measured by means of in-class observations. (Copies of the in-class observation forms are in Appendix A.) The observations produced data on how the teacher spent her time in the classroom (task analysis) and

on how frequently she reinforced and punished her students. Within a 15 minute period, immediately after the observation of student behaviors, the observer recorded data on teacher behavior according to the following instructions:

a. Reinforcement: All reinforcement that the teacher distributes within a 5 minute academic period is recorded. The categories of reinforcement are:

1. Praise - PR
2. Recognition - RG
3. Positive Facial Attention - FA+
4. Positive Physical Contact - PC+
5. Granting Privileges - GP
6. Tangible Reinforcements - TN
7. Others - O

b. Punishment: All punishment within a 5 minute period is recorded. The categories of punishment are:

1. Criticism - CR
2. Negative Facial Attention - FA (-)
3. Negative Physical Contact - PC (-)
4. Withdrawal of Privileges - WP
5. Time Out - TO
6. Others - O

c. Task Analysis: The teacher is observed very briefly every ten seconds for a total of four-minutes (24 observations). For each observation

her behavior is categorized according to the kind of task she is engaged in. The categories are as follows:

1. Individual Instruction - INDV
2. Group Instruction - GRP
3. Class Instruction - CLS
4. Housekeeping - HSKPG
5. Other Activities - O

The four minutes of task analysis observation are spread out over time with one minute intervals occuring both before and after teacher reinforcement is observed and the remaining two minutes taking place after punishment is observed.

Other Measures.

Three locally developed questionnaires were administered as a less formal means of evaluation. The parents of project pupils, the project teachers, and the project pupils were requested to respond to an anonymous questionnaire concerning their reactions to the project. Also, some of the more interesting, but unquantifiable anecdotal data are reported.

Testing Procedures

In-Class Observations

Project pupils and project teachers were observed systematically four times per week, every week, in all eight experimental classrooms, while the control pupils and teachers were observed for four days, one hour per day, during the pre-test period, the mid-year period, and the post-test period. The pre-test or baseline period occurred during the month of September before the project teachers introduced the success technique into their classrooms. The mid-year period took place in January and the post-test period occurred in April. The weekly data on project classes were used for diagnostic purposes, i.e., for assurance that the success technique was being continuously applied. For evaluation, one week of the in-class observation data taken during the pre-test, mid-year, and post-test periods were used for comparison with like data collected during those periods in the control classes.

In-class data were gathered by three black female assistant teachers, all trained by one of the behavior management technicians in order to increase agreement between observers. During the observation period, the observers were instructed not to interact with the students or the teacher unless it was absolutely necessary.

Observations were made only when the pupils were engaged in academic activity. If for some reason, academic

activity was interrupted, the observations stopped until academic achtivity was resumed.

Achievement Testing

The teachers in both the experimental and control classes administered the Metropolitan Achievement Tests to their students. As part of the Atlanta Public Schools testing program, the complete batteries of the MAT for appropriate grade levels were administered as a pretest in October, 1970, and again in an alternate form as a post-test in May, 1971.* Scores on MAT subtests in Reading, Word Knowledge, and Arithmetic/Computation were used to evaluate September to May academic progress in project and control classes. In January, the project oversaw the administration of selected MAT subtests to all experimental and comparison classes in order to monitor academic achievement as the school year progressed. Since the lowest level of the MAT is too advanced for beginning first graders, first grade achievement data were obtained by comparing scores on selected subtests from the MAT Primary I Battery, given to all first graders in January, with appropriate scores from the May testing.

Testing of Attitude Toward Self and School

During the last two weeks in September (baseline period) and again during the last two weeks in April, the three questionnaires designed to measure attitude toward

*Different versions of the MAT were administered in October and May. In May the Atlanta Schools switched to a restandardized version of the MAT, designed to take into account the problems of the inner-city.

self and school were administered to all experimental and control subjects above the first grade level in their homerooms. A young, black, male graduate student administered both the Pitt Attitude Toward School Questionnaire and the Intellectual Responsibility Questionnaire to all subjects. An assistant teacher, also a young black man, administered the Coopersmith Self-Esteem Inventory to all subjects. In order to minimize the importance of reading ability, especially within the second and third grade classes, the administrators read each item aloud to the subjects and keyed them when they were supposed to respond.

Academic Aptitude Testing

Appropriate levels of the California Test of Mental Maturity were administered by the classroom teachers during the baseline period to all experimental and control pupils. Post-test scores for the third grade only were obtained from the Atlanta City-Wide Testing Service which routinely tested this grade in March. Therefore, only results from third grade classes are reported herein.

Results and Discussion

Effects of the Experimental Treatment on the Project Pupils

In-Class Behavior

Two measures of pupil behavior were taken in all project and control classrooms: the per cent of time each pupil devoted to assigned tasks and the number of times each pupil engaged in disruptive behavior.

1. On-task behavior. From September to April, the project pupils exhibited a dramatic rise in academic involvement as opposed to a decline shown by the control pupils. As illustrated in Figure 2, the on-task behavior of the project and control pupils was virtually identical during the September baseline period - both groups devoted approximately 80% of available time to assigned tasks. However, as the experimental treatment continued, the per cent of time on-task increased for the project pupils, while it declined for the control pupils. By April, the attention level of the project pupils was more than 90%, as contrasted with the approximately 77% of the control pupils. (See Figure 2.)

   A summary of the per cent of time on-task during the pre, mid-year, and post-test periods is presented in Table 2. These data clearly

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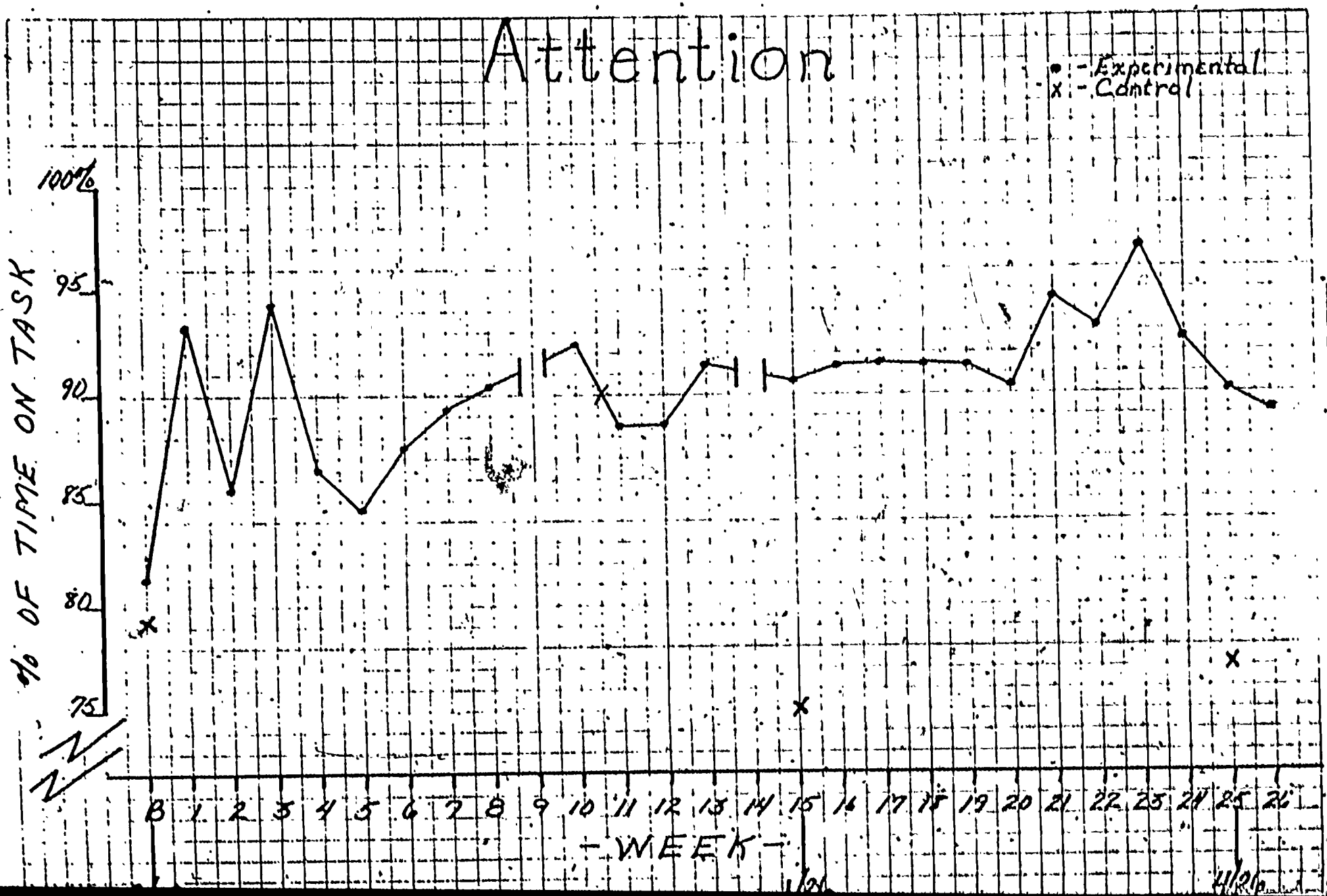

indicate that the project classes, with the exception of the second grade class, were superior to the control classes at the end of the year. In the first and third grades, project pupils showed gains in attention over the treatment interval, while control pupils showed declines. In the seventh grade, project pupils gained more than proximal controls but about the same as distal controls.

Table 2
Per Cent Time On-Task

1st Grade (2 classes)	N	Pretest	Mid-Year	Post-test	Gain
Experimental	44	82.9	90.6	90.3	07.4
Proximal	43	90.3	84.5	73.7	-16.6
Distal	31	91.5	95.6	86.0	-05.5
2nd Grade (1 class)					
Experimental	22	74.8	88.9	69.0	-05.8
Proximal	24	90.3	85.0	84.4	-05.9
Distal	13	89.3	80.6	84.5	-04.8
3rd Grade (2 classes)					
Experimental	48	72.7	89.8	92.2	19.4
Proximal	34	76.3	73.9	75.4	-01.0
Distal	45	76.0	52.2	54.8	-21.2
7th Grade (3 classes)					
Experimental	58	81.5	92.2	96.8	15.3
Proximal	60	69.3	57.6	75.3	06.0
Distal	60	72.3	77.9	89.9	17.6

Analysis of variance indicated no differences in on-task behavior among the groups at pretest but significant differences at post-test ($F = 33.5$, $p < .01$) and significant

differences in gains ($F = 24.500$, $p < .01$) during the year. Specific Grade X Treatment effects ($F = 20.034$ for post-test; $F = 11.636$ for gains scores) reflect the differences among experimental and control groups in the second and seventh grades, as opposed to the first and third grades. There is statistical evidence, then, that the success technique increased pupil involvement in academic assignments. Apparently the treatment resulted in substantial increments in academic involvement in all but a single project class.

2. Disruptive behavior. Figure 3 presents the mean number of disruptions (e.g., talking aloud without permission, away from desk without permission, physical contact among pupils) per child over a forty-minute interval (10 minutes per day for four days). Project pupils are less than one-half as disruptive as control pupils at every comparison point, including the base-line period in September. It is unclear whether the initial difference is due to pupil differences at the beginning of the year or to the training received by project teachers over the summer.

As shown in Table 3, the level of disruptive behavior in every project class (with the exception of one second grade class) was below that of the comparable control classes

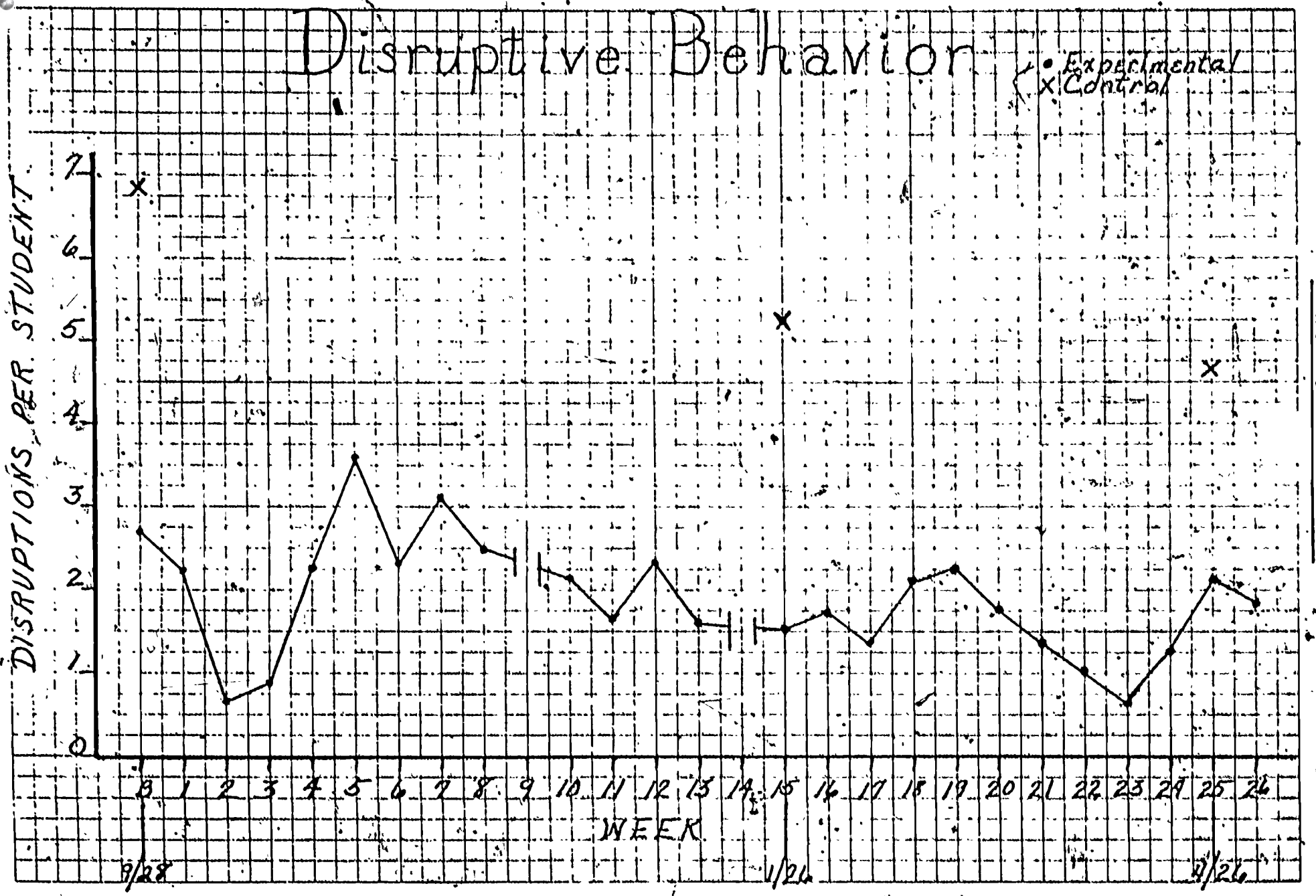

Figure 3 - Disruptive Behavior

during the post-test period. In the project first grade classes, the level of disruption dropped during the year, whereas the number of disruptions increased in the first grade control classes. In the third and seventh grade project classes, the reductions in disruption did not exceed those of the control classes; however, the levels of disruption in these project classes were much lower initially.

Table 3
Disruption
(Mean No. of Disruptions Per Child Per 10 Min. Interval)

1st Grade	N	Pretest	Mid-Year	Post-test	Reduction
Experimental	44	.924	.315	.716	.208
Proximal	43	.686	.754	1.434	-.748
Distal	31	.341	.536	1.081	-.739
2nd Grade					
Experimental	22	.803	.572	.977	-.174
Proximal	24	.718	.813	.514	.205
Distal	13	.321	1.042	1.256	-.935
3rd Grade					
Experimental	48	1.175	1.056	.437	.738
Proximal	34	2.875	1.014	1.414	1.461
Distal	45	2.683	2.724	2.407	.276
7th Grade					
Experimental	48	.342	.088	.260	.082
Proximal	60	2.364	2.055	1.324	1.040
Distal	60	2.165	1.060	.533	1.632

Although the disruptive behavior of the project pupils declined gradually over the course of the year, the overall reduction in disruption

from September to April was not statistically significant. The project staff and teachers agreed, however, that the level of disruption in most project classes was well within reasonable limits. In any event, no project pupil was sent to his principal for discipline. Such a statement cannot be made for the control pupils.

Average Daily Attendance

Pupil attendance data from official records for the first eight school months (where a school month consists of twenty school days) are shown in Figures 4 and 5. These graphs show average daily attendance in percentage terms for each month and an overall yearly average for the distal control, proximal control, and experimental groups.

Figure 4 depicts summary data for the primary grades (first, second, and third). As indicated by the yearly average bar graphs at the far right of the table, attendance was 89.2% for the distal control group, 89.7%, for the proximal control group, and 92.1% for the experimental group. It is interesting to note that project classes had better attendance records than control classes during each month in which the project was in operation. Figure 5 presents data for the middle school classes (seventh grade). Yearly averages shown are 92.8% for the distal control group, 85.4% for the proximal control group and 88.7% for the experimental group.

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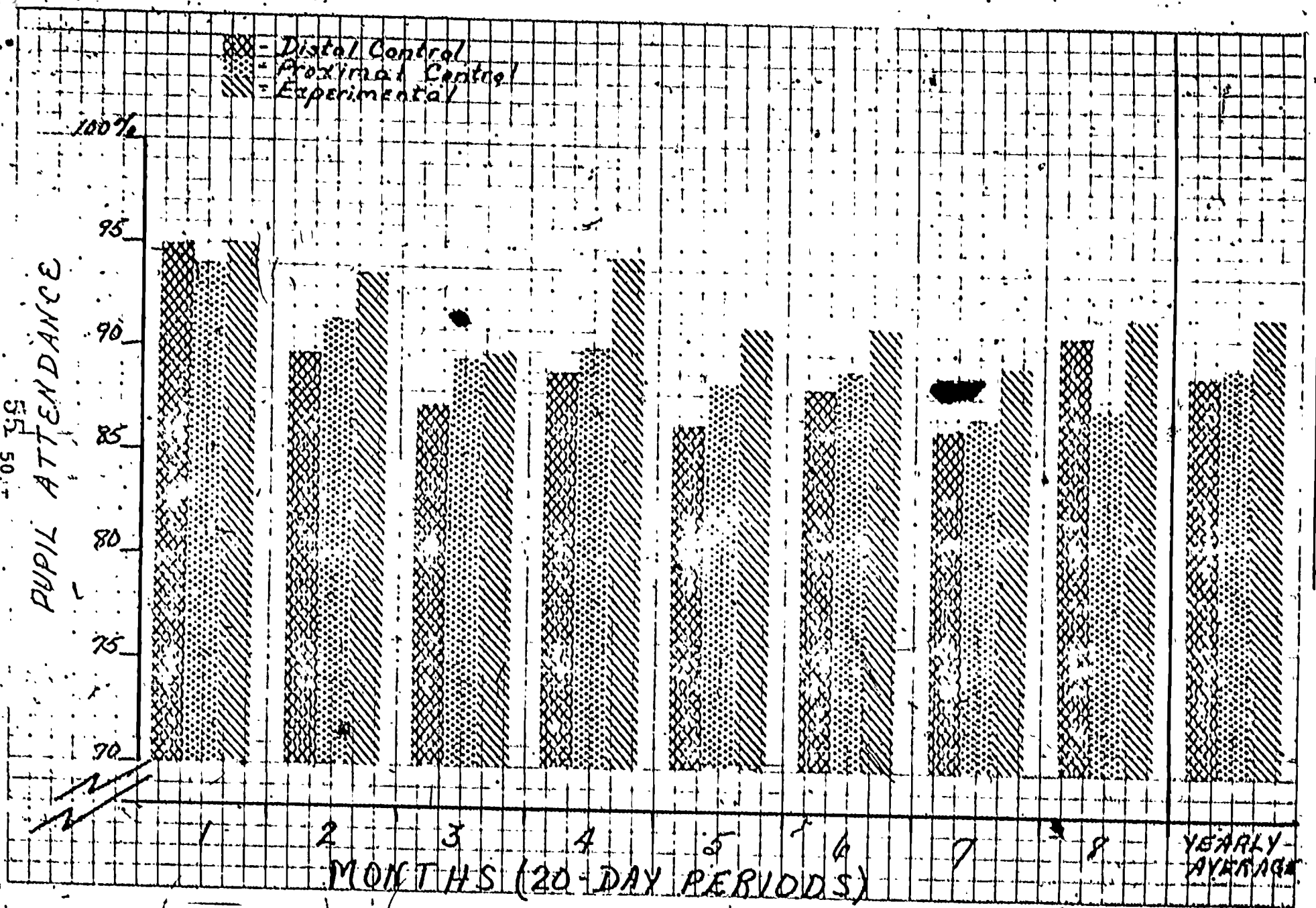

Figure 1 - Average Daily Attendance (Primary Grades)

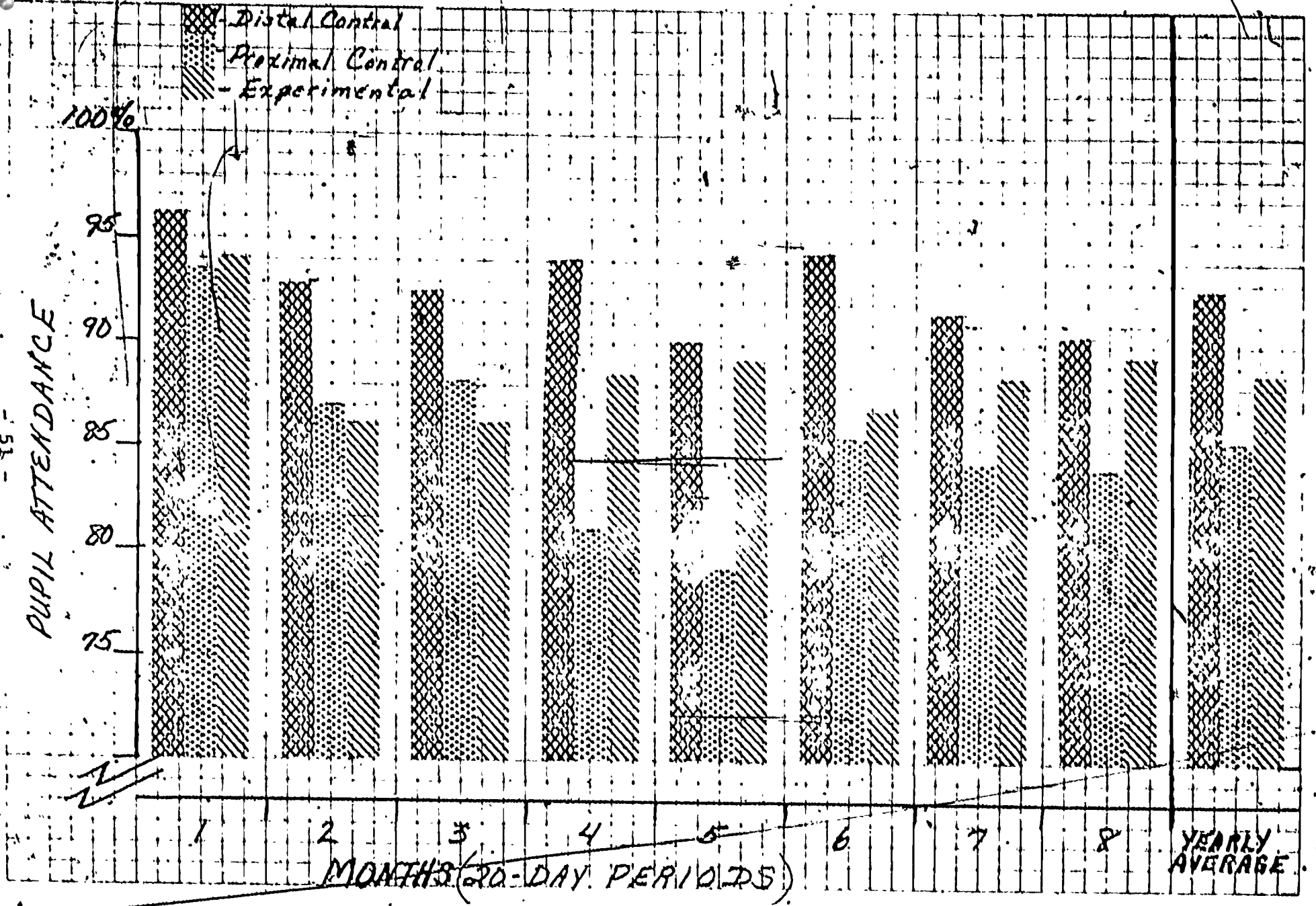

Figure 5 - Average Daily Attendance (Seventh Grade)

Although it is questionable whether the success treatment affected attendance in the middle school (project attendance for the year was greater than proximal attendance but less than distal attendance), the treatment had a clear effect upon the primary classes; attendance by the primary project classes was more than two percentage points greater than attendance by either the proximal or distal control groups.

Average Monthly Tardiness

Tardiness data are presented in Tables 4 for the primary grades and Table 5 for the seventh grade in terms of average daily tardiness percentages for the first eight school months and for the entire year. As expected, tardiness was lower in the primary project classes (0.6% yearly average) than in either the proximal control classes (1.2%) or the distal control classes (0.8%). In the seventh grade, however, tardiness in the project classes did not differ from that in the proximal control classes (4.2%), although it was considerably higher than tardiness in the distal control groups (1.1%). Evidently the success treatment had a beneficial affect upon tardiness in the primary classes but not in the middle school classes.

Table 4

Primary Grades 1, 2, and 3
Average Daily Tardiness in Per Cent

Months	1	2	3	4	5	6	7	8	Yearly Average
Distal Control	0.6	1.4	1.0	1.3	0.5	0.6	0.3	0.5	0.8
Proximal Control	1.4	1.5	0.6	0.9	1.4	1.4	0.8	1.9	1.2
Experimental	0.2	0.5	1.6	0.4	0.6	0.4	0.1	0.9	0.6

Table 5

Seventh Grade Tardiness Classes

Months	1	2	3	4	5	6	7	8	Yearly Average
Distal Control	0.1	1.7	1.3	1.2	1.1	1.1	1.4	0.9	1.1
Proximal Control	2.9	4.4	3.1	5.6	3.7	3.5	3.7	7.3	4.2
Experimental	3.7	4.8	4.5	4.2	4.9	4.6	3.4	3.4	4.2

Academic Achievement

If project pupils are less disruptive in class and more involved in assigned tasks than control pupils, they should progress more rapidly in their academic work. Moreover, their frequent exposure to positive reinforcement should have beneficial effects upon motivation and academic behavior. Thus, it was anticipated that project pupils

would display more academic improvement than control pupils as measured by standardized achievement tests.

In October and again in May, the Atlanta Public Schools administered appropriate levels of the Metropolitan Achievement Test (MAT) to all students in the Atlanta System. Scores on MAT subtests in Reading, Word Knowledge, and Arithmetic/Computation were used to evaluate September to May academic progress in project and control classes.

The results from these achievement tests (presented in Tables 6-10) were inconclusive. However, the data are at least suggestive of two things: First, the success technique does not retard academic achievement and may be capable of improving it (There is evidence that this occurred in the third grade classes.). Second, academic progress is discouragingly slow among the inner-city population from which the project and control pupils were drawn.

Table 6 contains the results of first grade MAT Reading and Word Knowledge subtests administered in January and May. The entries in Table 6 and all achievement tables are mean grade-equivalent scores. A gain of 1.0 indicates an increase of one grade level in achievement. There are no significant differences between experimental and control first-grade classes in Reading and Word Knowledge gain. The rather large gain in Word Knowledge among distal comparison students is the only instance in the data, reported here for all grades, where achievement progressed at, or above, the average rate;

and even these students were not at a second-grade level in May.

Table 6

MAT Reading and Word Knowledge
First Grade
(January and May, Grade Equivalent Mean Scores)

	N	Mid-Year	Post-Test	Gain
Reading				
Experimental	40	1.575	1.715	0.139
Proximal	41	1.610	1.651	0.041
Distal	28	1.457	1.511	0.054
Word Knowledge				
Experimental	43	1.372	1.707	0.335
Proximal	40	1.440	1.747	0.307
Distal	30	1.313	1.890	0.577

The Reading and Word Knowledge pre, post, and gain scores for the second, third, and seventh grades are summarized in Tables 7 and 8. For Reading, over all grades, there was no significant difference in gains between the experimental, proximal, and distal classes. The relatively large gain reported for the second-grade distal class was given little weight, due to the small number of pupils present in that class during the October and May testing. For Word Knowledge, over all grades, there was a significant difference in gains in favor of the experimental classes (F

= 3,528, $p < .01$). Obviously the comparatively huge gains among project third graders were responsible.

Table 7

MAT Reading
(Grade Equivalent Mean Scores)

2nd Grade	N	Pre-test	Post-test	Gain
Experimental	22	1.909	2.145	0.236
Proximal	22	1.791	2.345	0.555
Distal	12	2.000	2.767	0.767
3rd Grade				
Experimental	46	2.554	2.826	0.272
Proximal	22	2.332	2.155	-0.177
Distal	34	2.429	2.391	-0.038
7th Grade				
Experimental	53	3.785	4.013	0.228
Proximal	46	3.774	3.991	0.217
Distal	57	4.518	4.618	0.100

Table 8

MAT Word Knowledge
(Grade Equivalent Mean Scores)

2nd Grade	N	Pre-test	Post-test	Gain
Experimental	22	1.718	2.223	0.505
Proximal	22	1.773	2.355	0.582
Distal	11	2.073	2.782	0.709
3rd Grade				
Experimental	47	2.581	3.104	0.523
Proximal	22	2.218	2.236	0.018
Distal	31	2.477	2.523	0.045
7th Grade				
Experimental	52	3.827	4.113	0.287
Proximal	47	3.943	4.274	0.332
Distal	61	4.689	4.766	0.077

A comparison of the third grade project pupils with all third grade pupils in Area V of the Atlanta School System indicated superior performance by the project pupils. (Data for all pupils in Area V was available only at the third grade.) The project pupils scored reliably higher on the MAT

post-test in both Reading ($z = 5.72$, $p < .01$) and Word Knowledge ($z = 9.702$, $p < .01$).

While tables 6, 7, and 8 show project students performing well below grade level in May according to the Reading and Word Knowledge achievement tests, data available from Sullivan Programmed Reading are not consistent with these achievement data in the elementary grades.

Table 9 indicates the reading level attained in the Sullivan materials by project pupils as of the end of April. It is not clear why the project's elementary pupils on the average are reading above grade level in Sullivan but not scoring equivalently on the MAT. Sullivan's grade level scale is intended to be roughly comparable to that of the MAT. Whatever the explanation, the Sullivan information can only be encouraging.

Table 9

Sullivan Programmed Reading
April Status of Project Students

Grade	N	Median Book	Mean Grade Level
1st	46	4	2.5
2nd	24	6	3.0
3rd	49	13	4.4
7th	66	11	4.2

As seen in Table 10, the Math achievement data also show the trends evident in MAT Reading and Word Knowledge. It was only at the third-grade level that the experimental class made significantly greater gains in Math than the

control classes ($F = 15.178$, $p < .01$.). Within the other grades, there were no significant differences in gains between experimental and control classes.

Table 10

MAT Math Achievement
(Grade Equivalent Mean Scores)

	N	Pretest	Post-test	Gain
Arithmetic, Grade 1				
Experimental	38	1.721*	2.168	0.447
Proximal	29	1.569*	1.879	0.310
Distal	21	1.371*	1.490	0.119
Arithmetic, Grade 2				
Experimental	22	1.645	2.250	0.605
Proximal	20	1.585	2.420	0.835
Distal	9	1.978	2.800	0.822
Computations, Grade 3				
Experimental	47	2.564	3.221	0.657
Proximal	29	2.372	2.176	-.197
Distal	35	2.391	2.571	0.180
Computations, Grade 7				
Experimental	51	5.008	5.216	0.208
Proximal	43	5.214	5.535	0.321
Distal	64	5.438	5.686	0.248

Why the success technique had a positive effect on achievement in the two third grade classes but not in first or second grade classes is unclear. Possibly this is only a chance phenomenon; perhaps the third-grade project teachers are exceptional with or without the technique; or perhaps children at this specific grade level are especially susceptible to the experimental treatment. The limited

*First grade, pre-test data is from January testing.

academic gain among the seventh grade pupils is somewhat easier to explain. A pattern of deceleration in academic progress as the pupil advances in grade level is typical for inner-city children and may reflect a history of failure in school and an accompanying loss of motivation. Thus, our older pupils especially may have entered project classes possessing habits and expectations incompatible with achievement. These habits and expectations, developed over years of traditional schooling, may not have been susceptible to great change during a span of one year.

Attitude Toward Self and School

If inner-city children who have consistently experienced failure in the academic environment begin to experience success, their attitudes toward themselves and toward school should begin to shift in a positive direction. As academic achievement is realized, parallel changes in attitude should result. Because the project staff anticipated academic gains as a result of the success treatment, it was hypothesized that project pupils at the end of the school year would have a better self-concept and a more internally oriented locus of control (i.e., they would have begun to believe that they, rather than other people, are responsible for their academic successes and failures).

Little evidence was gained from the results of psychological tests to support the present hypothesis. The

project pupils gained very little, if any, in self-esteem; only the third grade gained more than both control groups and even here the gain was quite modest. The positive attitude shifts by the third grade pupils parallel their gains in IQ and academic achievement. Although the evidence is tenuous, the project pupils may have shifted somewhat toward a more internal locus of control; i.e., they may have become more willing to accept responsibility for success in school. There was no indication, however, that they became more willing to accept the blame for academic failure themselves. In addition, the experimental treatment did not seem to affect the pupils' attitudes toward school, but there was strong indication that the project pupils were generally quite happy with the program. These results are not surprising since they are similar to the findings in the academic sphere.

The following instruments were administered to project and control pupils in September and April, in an attempt to measure variables associated with self-evaluation, locus of control, and attitude toward school:

a. Coopersmith Self-Esteem Inventory, Form B

Table 11 lists gains in self-esteem from September, 1970, to April, 1971, as measured by the Coopersmith. Although the differences in gain were significant as far as treatment ($F = 4.547$; $p < .05$) and grade ($F = 5.845$; $p < .01$) were concerned, they may not reflect true effects

because the groups differed initially. These initial differences were detected in the pretest with respect to both treatment ($F = 3.624$, $p < .05$) and grade ($F = 4.700$, $f < .01$).

In contrast, the analysis of the gain scores, but not that of the pretest, indicated a significant Grade X Treatment interaction ($F = 4.126$, $p < .01$). Differences in self-esteem developed among the groups during the year, but these differences were not consistent for all three grades. Apparently the project pupils in the second and seventh grades experienced little gain, even losses in self-esteem, as compared with at least one of the appropriate control groups, while the third grade project pupils experienced a very modest gain in self-esteem.

Table 11

Coopersmith (Self-Concept)

2nd Grade	N	Pretest	Post-test	Gain
Experimental	19	60.000	67.579	7.579
Proximal	20	56.400	69.800	13.400
Distal	9	63.111	65.778	2.667
3rd Grade				
Experimental	40	63.100	64.000	0.900
Proximal	24	58.333	58.000	0.333
Distal	29	66.069	63.172	- 2.897
7th Grade				
Experimental	56	60.393	58.714	- 1.679
Proximal	35	53.771	62.800	9.029
Distal	58	55.862	65.724	9.862

b. Crandall Intellectual Achievement Responsibility Questionnaire

The Crandall gauges locus of control in the school environment along both positive and negative dimensions. The scale assesses pupils' beliefs that they, rather than other people, are responsible for their intellectual-academic successes and failures. The subscale scores measuring responsibility for success and for failure are generally independent of each other.

1. Positive Internal Locus of Control. Table 12 illustrates that the experimental pupils

in all three grades exhibited greater gains from pretest to posttest than the control pupils; i.e., the project pupils moved toward acceptance of the belief that they had personal control over academic achievement. This effect may have been due to the experimental treatment ($F = 6.853$, $p < .01$), or it may have resulted from the fact that the experimental and control groups differed initially. According to the analysis of the pretest results, the project pupils' scores were significantly lower than those of the control pupils ($F = 6.853$, $p < .01$). It could be that gains at the lower end of the scale are easier to make than those at the higher end. This interpretation is strengthened by the evidence that the post-test scores of the project pupils did not differ from those of the control pupils.

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Table 12

Crandall's Positive Internal Locus of Control

2nd Grade	N	Pretest	Post-test	Gain
Experimental	20	8.450	11.150	2.700
Proximal	14	8.571	9.786	1.214
Distal	11	9.545	10.455	0.909
3rd Grade				
Experimental	46	10.370	12.130	1.761
Proximal	28	10.321	12.036	1.714
Distal	32	10.813	11.563	0.750
7th Grade				
Experimental	56	12.500	13.536	1.036
Proximal	66	13.015	13.394	0.379
Distal	59	13.[illegible]	13.627	0.305

As expected, the grade variable had a significant effect as measured by the pretest, by the post-test, and by the gain scores. Apparently the higher the grade, the more likely the pupil will accept responsibility for success in school, not only at the beginning of the year but also at the end of the year. Project and control pupils in the seventh grade scored higher than those in the third grade, who scored higher than those in the second grade. The gains, however, were greater for those who scored lower on the pretest; i.e., the lower the grade, the more likely the pupils

would change his positive locus of control over the course of a school year.

2. Negative Internal Locus of Control

The experimental treatment had no major effect upon negative locus of control, as measured by the Crandall Questionnaire. The gains made during the school year (Table 13) were not reliably different among the project and control pupils. Although Grade and Grade X Treatment effects were detected by the pretest and the post-tests, the gain scores could not be differentiated on these bases. In summary, the higher the grade, the more likely the pupil would accept responsibility for failure in school; but, unlike positive locus of control, there seems to be little or no relationship between grade level and the likelihood that the pupil will shift his negative locus of control during the school year.

Table 13

Crandall's Negative Internal Locus of Control

2nd Grade	N	Pretest	Post-test	Gain
Experimental	19	8.053	6.632	-1.421
Proximal	14	7.929	7.786	-0.143
Distal	11	6.909	8.818	1.909
3rd Grade				
Experimental	37	9.189	9.892	0.703
Proximal	28	7.821	8.071	0.250
Distal	32	7.719	8.094	0.375
7th Grade				
Experimental	56	10.446	10.196	-0.250
Proximal	66	10.682	11.121	0.439
Distal	59	11.475	11.203	-0.271

c. Fitts Attitude Toward School Questionnaire

Table 14 lists gains detected by the Fitts Questionnaire from October, 1970, to April, 1971. For the purpose of analysis second and third grade students were pooled. Analysis of gain scores showed that the experimental treatment had no impact upon attitude toward school.

Table 14

Pitts Attitude Toward School
(Smaller Number Represents Better School Attitude)

2nd Grade	N	Pretest	Post-test	Gain
Experimental	9	3.939	3.879	0.060
Proximal	9	5.007	4.337	0.670
Distal	6	4.478	2.868	1.610
3rd Grade				
Experimental	29	3.716	3.991	-0.275
Proximal	14	4.407	4.607	-0.199
Distal	27	4.800	4.741	0.060
7th Grade				
Experimental	52	4.312	4.583	-.277
Proximal	45	3.964	4.238	-.274
Distal	51	4.179	4.260	-.081

Academic Aptitude

Appropriate levels of the California Test of Mental Maturity were administered during the pretest period to all experimental and control pupils in the third grade. Both the experimental and the control groups made gains from September, 1970, to March, 1971, but the gains of the experimental group were the most dramatic (Table 15). The IQ scores of the project pupils climbed some 14 points, shifting from well below average to almost precisely the national average. All three groups differed according to the pre-test ($F = 5.572$, $p < .01$), but these differences increased during the school year, resulting in considerable

and reasonably reliable ($F = 2.601$, $p < .10$) upward movement by the project pupils. There is a strong suggestion, then, that the experimental treatment served to elevate academic aptitude for at least the third grade.

Table 15
IQ Scores
(Grade 3 Only)

	N	Pretest	Post-test	Change
Experimental	48	85.688	99.688	14.000
Proximal	31	75.290	84.129	8.839
Distal	40	82.250	90.275	8.025

Effects of the Experimental Treatment on the Project Teacher's In-Class Behavior

The implementation of the success technique depends heavily upon the successful training of project teachers. Thus, a basic and paramount objective of Project Success was to train teachers in the use of a technique that would guarantee higher levels of success experiences for project pupils. Teacher training consisted of theoretical and practicum experiences designed: (1) to increase the frequency with which teachers reward project pupils, (2) to decrease, where necessary, the frequency of punishments delivered, and (3) to increase the amount of individual and small group teaching relative to "full class" lecturing.

In order to determine whether project teachers were in fact meeting these objectives relative to control teachers, all classrooms were observed for four days in September before implementation of the success technique, then for four days in January and April. Project classes were observed four days per week throughout the year.

Frequency of Positive Reinforcement

Observers recorded the frequencies of all forms of positive reaction to children (e.g., positive comments, recognition, the awarding of special privileges, and tangible rewards) during a 10 minute period. The total number of rewards administered per four day interval (40 minute observation interval) is presented in Figure 6.

Several conclusions may be drawn from an inspection of Figure 6. First, both project and control teachers delivered few reinforcements during the baseline period. On the average, from two to five children of the 25 to 30 pupils in the classes were rewarded during a ten-minute interval. For the next 13 weeks project teachers began to administer rewards more frequently. At the peak, project teachers were delivering 20 to 23 reinforcements in a ten-minute interval; that is, they were delivering enough "successes" to reach almost every child in a ten-minute interval.

Although the frequency of reward delivery was more sporadic beyond the 13th week, project teachers continued to promote more success experiences than did control teachers.

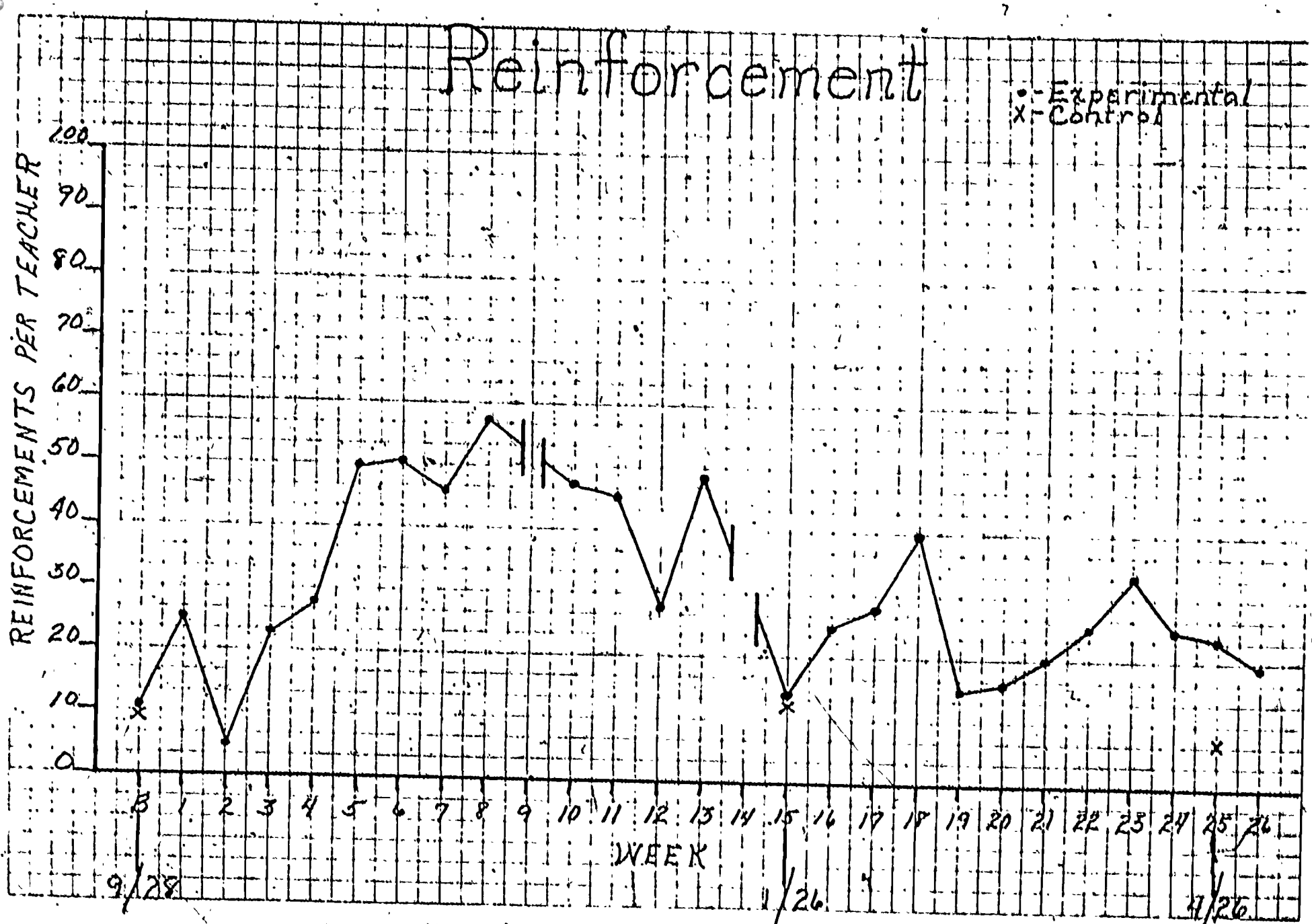

Figure 6 - Frequency of Positive Reinforcement

In addition, the rewards delivered by project teachers reached a larger proportion of project pupils. In April, 47 per cent of the project pupils received at least one reward during the observational interval, as opposed to 10 per cent of the control pupils.

There was some indication that the project teachers delivered more rewards during the January test period than did the control teachers ($t = 1.57$, $p < .20$). However, there was strong evidence that the project teachers (with the exception of the second grade teachers) provided more success experiences during the April test period ($t = 2.76$, $p < .01$). Gains in reinforcement rate were mixed but generally in favor of project teachers.

Table 16 presents the mean number of reinforcements received by each child. The data are listed by grade level, with the two control groups (proximal and distal) listed separately.

Table 16

Reinforcement
(Mean Number of Reinforcements Per Child Per Ten Minutes)

1st Grade	N	Pre-test	Mid-Year	Post-test	Gain
Experimental	44	.047	.059	.102	.055
Proximal	43	.000	.013	.023	.023
Distal	31	.000	.000	.088	.088
2nd Grade					
Experimental	22	.000	.152	.000	.000
Proximal	24	.000	.000	.000	.000
Distal	13	.000	.000	.000	.000
3rd Grade					
Experimental	48	.090	.205	.026	-.064
Proximal	34	.167	.012	.017	-.150
Distal	45	.106	.047	.006	-.100
7th Grade					
Experimental	58	.038	.115	.272	.233
Proximal	60	.004	.000	.000	-.004
Distal	60	.018	.005	.004	-.014

Frequency of Punishment

Observers recorded the frequency of all forms of punishment (e.g., critical comments, sarcasm, physical contact) delivered to children over a ten-minute interval. These data are summarized in Figure 7, where each point represents the average number of punishments administered in a forty-minute period (10 minutes per day for four days). Clearly the project teachers administered fewer punishments than did control teachers. At the three comparison points, project teachers delivered approximately one-half as many punishments as the controls. The initial baseline difference

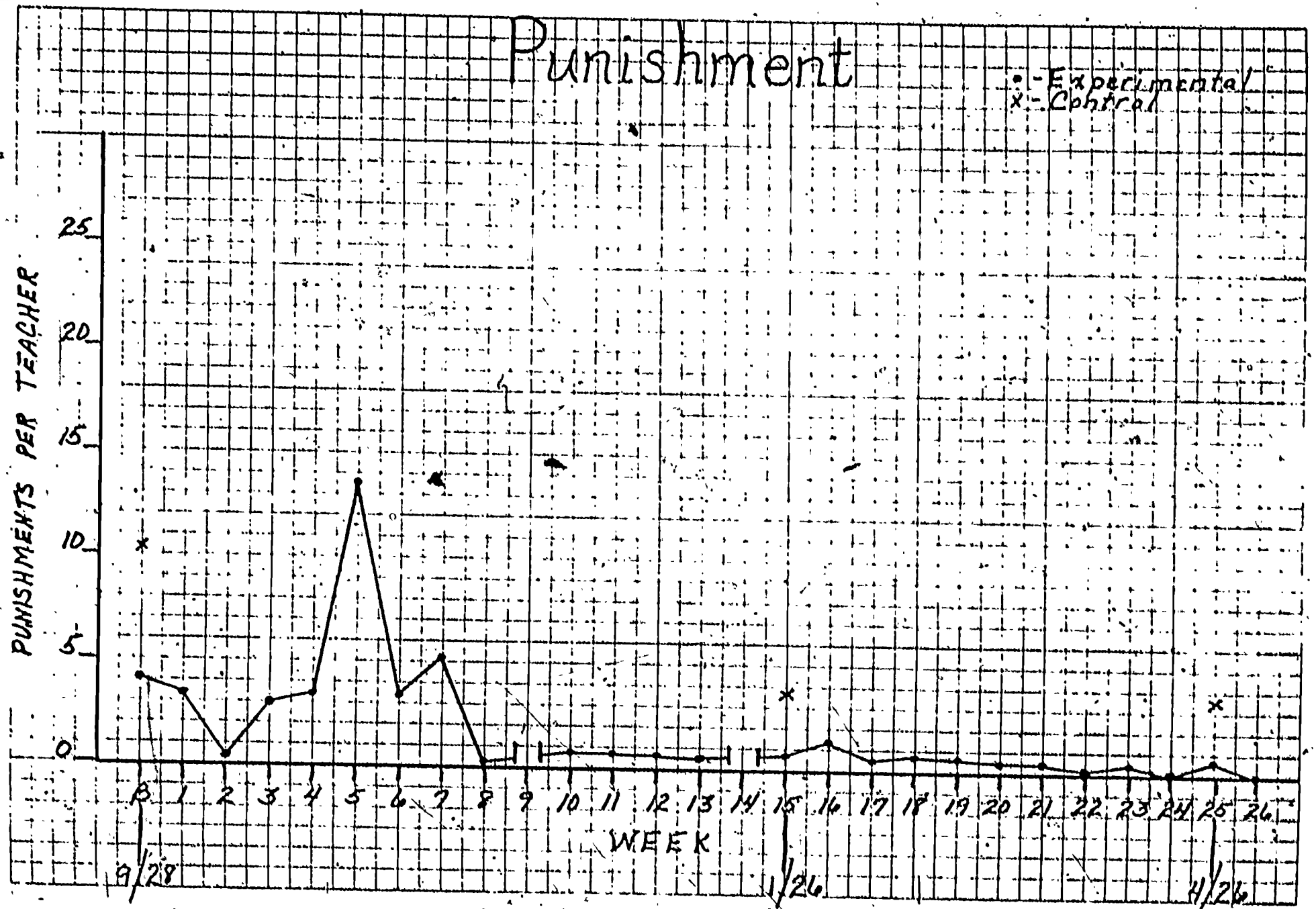

Figure 7- Frequency of Punishment

between project and control teachers was probably due to the fact that the project teachers had been trained in the summer workshop to avoid punishment whenever possible in order to minimize the failure experiences of their pupils. While the differences between the project and control teachers were large at the three comparison points, they were not reliable at the .10 level of significance.

It is obvious from a comparison of Figures 6 and 7 that the project teachers minimized failure experiences and maximized success experiences in their classrooms. On the average, the project teachers rewarded their pupils eight to ten times for each punishment experience. In contrast, the control pupils received an average of only two to three rewards per punishment.

Individual and Small Group Instruction

As evidenced by the data in Table 17, project teachers attained the goal of working more with individual pupils and small groups. The figures in Table 17 represent the percentage of total teaching time spent either with individuals or small groups, as opposed to time with the entire class. All project teachers at post-test spent more than 80 per cent of their teaching time with individuals and small groups, with large gains from September to April. In contrast, control teachers typically spent less than half of their time teaching in small groups, and in no cases devoted more than 75 per cent of their teaching time to small group

or individual instruction. Control teachers did not change greatly the amount of small group teaching over the year.

Table 17

Percentage of Individual and Small Group Instruction

1st Grade	N	Pretest	Mid-Year	Post-test	Gain
Experimental	2	92	08	100	08
Control	4	39	32	46	07
2nd Grade					
Experimental	1	57	100	100	43
Control	2	38	75	50	12
3rd Grade					
Experimental	2	55	81	100	45
Control	4	53	53	19	-34
7th Grade					
Experimental	3	54	81	85	31
Control	6	28	22	38	10

Other Measures of the Effects of the Experimental Treatment

Student Questionnaire

Questionnaires were completed by the project pupils in May, 1971, to obtain their reactions toward the project. Replies from 55 students indicate that they are generally quite favorably disposed toward the program, as shown in Table 18.

Table 18

PROJECT SUCCESS ENVIRONMENT

Questionnaire for Students

(Replies received from 55 students are categorized beneath each question.)

1. Do you like being in a Project Success classroom?

   Yes - 55 No - 0

2. Do you feel that getting tickets or checkmarks made you work harder than you did in last year's class?

   Yes - 39 No - 16

3. Was it better having two teachers in the room instead of one?

   Yes - 47 No - 8

4. Did you keep on doing your best work when some of the rewards were not given any more?

   Yes - 50 No - 5

5. Were you upset by the visitors who came to observe your class?

   Yes - 5 No - 49

6. Do you look forward to your group's turn in the centers of stations?

   Yes - 51 No - 4

7. Do you feel that you are learning a lot in school this year?

   Yes - 52 No - 3

8. Do you feel that your teachers this year are more fun to be around than your other teachers?

   Yes - 45 No - 10

9. What did you enjoy most about your class this year besides the rewards you earned?

   Centers - 20 Classmates - 4

   Trips - 7 Classwork - 9

   Tickets - 5 Other - 9

   Teacher - 24

10. What did you dislike about your class this year or what would you like to see changed?

    No change - 28 Dislikes and changes - 7

Teacher Questionnaire

The project teachers' reactions to the success technique in general and to each of its basic components in particular, were assessed by an anonymous questionnaire. Each yes-no question was worded so that the teachers could respond with answers ranging from "definitely yes" to "definitely no." A summary of the responses to each question is presented in Table 19.

The responses to question 4, 15, and 27 best reflect teacher opinion concerning the effectiveness of the success technique. The responses to question 4 indicate that most of the teachers (five of seven respondents) believe that the technique produced positive changes in the academic performance and school attitude of project pupils. Half of

8. Do you feel that your teachers this year are more fun to be around than your other teachers?

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the teachers reported increased achievement motivation and improved self-esteem in their pupils. Responses to Question 15 indicate that six of the seven responding teachers are convinced that the program has merit. As evidenced by the responses to question 27, six of the project teachers plan to continue using some aspects of the project, even after termination of the program. The components of the program that most teachers wish to continue using involve the basic elements of the technique, i.e., emphasis on positive aspects of behavior, the use of more rewards than punishments, and the grouping of students.

In general, then, project teachers seem to be impressed with the effectiveness of the success technique. As further evidence of this opinion, all project teachers have elected to continue with the project for another year.

Reply

PROJECT
EVALUATION OF PROJECT TEACHERS

Seven of the eight project teachers responded to an anonymous questionnaire during February, 1971. The number of replies received for each answer category are summarized below:

	Definitely Yes	Generally Yes	Neutral or No Effect	Generally No	Definitely No
1. Do you feel that the summer workshop prepared you for program implementation?	2	5			
2. Does the summer training program require more time on:					
a. Lecture-discussion of project principles	1	4	1		1
b. Practicum experiences with project principles	2	2	2	1	
c. Curriculum planning	2	3	1	1	
d. Other (specify) Attendance	1				
3. Would you favor discussion of the basic ideas behind the project during the summer session (e.g., discussions of the value of using tangible rewards)?	1	4	2		
4. Has Project Success Environment produced any of the following changes in your students?					
a. Improved academic performance	2	3	2		
b. Improved attitude toward school	3	2	2		
c. Higher achievement motivation	2	2	3		
d. Improved self-esteem	3	3	1		
e. Other (specify) None					
5. Has the program been detrimental to any of your students?			1	1	4
6. Do you think the tangible rewards are necessary for urban children?	2	2	2	1	
7. Should the students be "weaned" from tangible rewards more quickly next year?	1	1	1	4	
8. Have the interest centers been a valuable component of the program?	4	3			
9. Do students find the interest centers reinforcing?	3	3	1		
10. Do you find it difficult to continue the program principles throughout each school day?		2	2	1	2

	Definitely	Generally	Neutral or No Effect	Generally	Definitely
11. Are there particular times of day, days of the week, or content areas that make program implementation especially difficult?			2	4	1
if yes, when _____					
12. Do you believe that your attempts to reward "good" students and ignore misbehaving ones have been effective in maintaining classroom control?	2	1	3	1	
13. Do you think more punishment is necessary in project classes?	1	1	1	3	1
14. Could the technique you are using be continued without the back-up support of project staff?	2	3		1	1
15. Have the progress and behavior of your students convinced you that this program has merit?	2	4	1		
16. Are the assistant teachers essential to the implementation of the project?	3	3	1		
17. Have you been generally satisfied with the services provided by your assistant teacher?	3	3		1	
18. Have you permitted your assistant teacher to assume more teaching responsibility than you have in the past?	3		4		
19. Do you object to the daily presence of the data gatherers in your classroom?			2	5	
20. Does the presence of the data gatherers in your class cause you to teach differently?			2	3	2
21. Do you continue to use the program principles when the data gatherers and others are not present in the room?	5	2			
22. Has physical punishment been necessary for controlling some of your students?		1		2	4
23. Have the behavior technicians been helpful?	2	2	2		1
24. Would you prefer having technicians available more frequently?		3	1	1	2
25. Has the coordinator at your level been of value to you?	3	4			
26. Do project staff give teachers enough support?	2	2	1		2
27. Do you think that you will attempt to continue using some of the ideas developed for Project Success even after the program is terminated?	3	3	1		

Check below the aspects of the program you would continue to use:

a. tangible rewards (2)
b. emphasizing the positive aspects of student behavior (6)
c. using more reward (whether tangible or not) than punishment (7)
d. curriculum (5)
e. interest center (7)
f. cheerful care of students (3)
g. grouping of students (6)
h. other (specify) No comments made

28. Further comments: (None)

Parent Questionnaire

In May, 1971, the parents of the project pupils were requested to respond to a questionnaire concerning their reactions to the project. As evidenced by the replies summarized in Table 20, most of the 90 respondents expressed favorable opinions of the success approach to classroom instruction.

Table 29

PROJECT SUCCESS ENVIRONMENT

Parent's Questionnaire

(Replies received from 90 parents are categorized beneath each question.)

1. Has your child been more excited about his class this year than in other years?

   Yes - 86 No - 4

2. Have you been contacted more this year by your child's teacher or the principal concerning behavior problems?

   Yes - 15 No - 75

3. Do you believe that your child is achieving more in his class this year than other years?

   Yes - 83 No - 5

4. Do you think that the teacher should ignore your child's bad behavior and praise his good behavior and school work?

   Yes - 10 No - 80

5. Do you feel that allowing children to earn rewards in school is wrong even if it increases learning?

   Yes - 6 No - 84

6. Did your child get upset when it was necessary for him (her) to miss a day at school this year?

   Yes - 73 No - 17

7. Has your child expressed any bad feelings to you about being in a Project Success Environment class?

Yes - 7 No - 83

8. Has your child's behavior at home improved this year?

Yes - 67 No - 15

9. Do you want your child removed from a Project Success Environment class next year?

Yes - 8 No - 78

10. What is your opinion of the project based on what you may have seen or what your child may have told you?

Favorable - 67 Unfavorable - 0

11. What are some of the things that your child has told you about his class this year that are different than last year's class?

Favorable - 75 Unfavorable - 0

Anecdotal Data

In addition to examining objective data, it is often helpful to consider some of the non-quantifiable incidences that occur as a result of any innovative public school program. Such vignettes may provide an added dimension to the evaluation of a program. Listed below are some of the more interesting occurrences related to Project Success Environment.

The three project principals reported that discipline referrals from project teachers was near zero.

Most of the project teachers related that they were no longer so emotionally and physically drained at the end of the day. They attributed this directly to the ease of administering the success technique. "I can even cook supper for my husband now," one said.

One rainy day last January, a third grade girl cried because her mother would not allow her to go to school in the rain, "so I can earn by checkmarks."

From mid-year on, many observers reported that the project pupils modeled their behavior after positive teacher behavior, as for example in the case of a "mini-teacher" happily distributing checkmarks and carefully saying "thank you" for cooperation on the part of his peers.

In May, one class formally petitioned its teacher to confer frequently with one of the project teachers about how she could incorporate Project Success Environment techniques in her clases. The final result was the establishment of the success technique, including the interest stations and positive reinforcement, in five French classes.

Toward the end of school, a project staff member conferred informally with several middle school pupils outside their classroom and asked their general reaction to Project Success. After a long silence one girl said, "Well, one thing we've learned, if you don't work, you don't earn any tickets."

Each of the eight original project teachers elected to continue with the program for a second year. And the eight new project teachers for Year II are all volunteers.

Summary Year I

The success technique had a major impact upon the in-class behavior of the project pupils. The technique effectively increased attention to assigned academic material and reduced disruptive behavior in the classroom. From September to April, the project pupils exhibited a dramatic rise in academic involvement, as opposed to a decline shown by control pupils. By April, the attention level of the project pupils was more than 90 per cent, contrasted with the approximate 77 per cent level of the control pupils. In addition, project pupils were less than one-half as disruptive as control pupils at every comparison point. Data from official school records also indicate that the experimental treatment had a beneficial effect upon pupil attendance and tardiness at the primary school level, although it is doubtful that these variables were affected at the middle school level. The success technique, then, clearly established an appropriate environment for academic achievement - a target goal for Year I of the project.

The effects of the success technique on academic achievement were inconclusive. There was evidence of

accelerated academic achievement at the third grade level. At every other grade, however, project and control classes performed about equally well. Because the establishment of orderly classrooms was of paramount concern during the initial stages of the project, positive reinforcement was, for the most part, contingent upon appropriate conduct and "on-task" behaviors. The fact that this procedure greatly reduced disruptions and enhanced-task involvement is, in and of itself, significant. Many inner-city teachers are so frustrated by the popr conduct of their students that teaching becomes less important than maintaining some semblance of order. However, the results for Year I suggest that having an appropriate learning environment is no guarantee of academic success. Rather, it would appear crucial that reinforcement be made contingent upon appropriate academic behaviors once conduct behaviors are well established.

Very little evidence to indicate that the project pupils' attitudes toward themselves and toward school shifted in a positive direction was gained from the results of psychological tests. The project pupils gained very little, if any, in self-esteem, and the third grade gained more than both control groups, and even in this case the gain was quite modest. Although the evidence is tenuous, the project pupils may have moved somewhat toward a more internal locus of control, i.e., they may have become more willing to accept responsibility for success in school

There was no indication, however, that they became more willing to accept the blame for academic failure. In addition, the experimental treatment did not seem to affect the pupils' attitude toward school. These results are not surprising, since such changes may not occur without changes in academic performance.

The CTMM was administered pre- and post only to the third grade classes. Intelligence-score gains for project pupils in these classes nearly doubled the gain in control classes. These data suggest that the success technique elevates academic aptitude, probably by teaching these children more generalized skills than are taught in control classes.

The implementation of the success technique depended heavily upon the training of project teachers. Thus, a basic and paramount objective of the project was to train teachers in the use of a technique that would guarantee higher levels of success experiences for project pupils. In-class observational data indicated that the project teachers minimized failure experiences and maximized success experiences in their classrooms.

YEAR II 1971-72

The second year of the project was a replication and extension of the program developed in Year I. First year results indicated that the success technique was

sufficiently developed to provide inner-city teachers with a usable behavior management system but not, as yet, an effective program for the acceleration of academic performance. In the second year of the project the success technique was refined in order to (a) improve the behavior management system and the teacher training procedures (b) produce accelerated academic performance and (c) reduce the cost of the system to maximize its economic feasibility.

One of the major problems encountered during the initial year was modification of teacher attitudes about discipline. Our teachers were reluctant to adopt a system which minimized punishment; many felt that children should not be rewarded for appropriate social and academic behaviors. They felt these behaviors should occur without inducement. Several of the eight first year teachers were not really convinced of the usefulness of the project until the middle of Year I. In order to facilitate this attitude change, teacher training in the summer preceding Year II was more heavily weighted toward the philosophy behind the technique. Further, Year I teachers were employed to assist in the training so that new teachers could be exposed to their attitudes about the technique. Third, teachers were given more applied training to enable them to better understand the procedure from the practical perspective of the classroom.

For Year II, heavy emphasis was placed upon applying the success technique to academic behaviors. Procedures

were developed to guarantee that children received reinforcement predominantly for appropriate academic behaviors after social behaviors were well established. Year I data indicated that within about six weeks from the start of the program most classes could be shifted to reinforcement for academic behavior. Thus, this time interval became the target for Year II.

Several changes were made to reduce the cost of program implementation and operation. The single greatest cost of the technique was for the assistant teacher in each class. Project teachers felt that they could manage the technique without this much additional help. For these reasons, assistant teachers were eliminated from project classrooms for Year II. Instead, each project (and control) teacher was given the help of a teacher aide for approximately 90 minutes per day. This change reduced the cost of the technique about 50 percent. Second, an attempt was made to eliminate tangible reinforcers more quickly in Year II relative to Year I. The goal here was to switch from tangibles to activity reinforcers within six to eight weeks of program implementation. Third, an attempt was made to develop and test a less inexpensive training procedure requiring less training time and fewer professional, therefore costly, training staff. An entire elementary school faculty was trained using this inexpensive training package and data were collected on its effectiveness. The

latter data are repeated elsewhere as a second study conducted during Year II. (See Toomer log.)

Several minor changes in procedure, program and experimental design were also made. Because the technique appeared to produce a substantial increase in tested I.Q. at the third grade, the CTMM was administered pre and post to all experimental and control classes to determine the generality of this finding. The number of project classes was expanded to 16 including first, second, third, fourth, sixth and eighth grades. This expansion made it possible (1) to test the program over a wider range of grade levels and (2) to keep first-year project children in project classes for a second year. The latter decision provided an opportunity to examine the effects of the project longitudinally. Finally, school attitude, locus of control, and social desirability scales were administered to selected groups of experimental and control classes to assess whether these psychological variables would show change with the expected change in academic achievement.

Method Year II

Subjects and Design

The subject population during the second year of the project consisted of 367 male and 363 female black pupils enrolled in the same four inner-city schools from which the first year's population was drawn. As shown in Table 1, subjects attended the first, second, third, fourth, sixth, and eighth grades and were divided into an experimental group and a control group of 15 and 14 classes respectively, with 22 to 25 pupils per experimental class and 25 to 28 pupils per control class. The control classes at the elementary level were distal to the experimental classes, while those at the middle school level (sixth and eighth grades) were proximal. Of the 355 experimental subjects, 154 were exposed to the treatment over a period of two consecutive academic years and the remainder were involved in the study for the second year alone, so that the percentage of "two-year" pupils in the experimental classes during the second year ranged from zero in seven classes to as high as 81 per cent in two classes.

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Table 1

Experimental Design Year II

Grade	Class	Sex	Race	EXPERIMENTAL Teachers Year of Entry	Per Cent of Two Year Pupils	CONTROL Teachers Sex	Race
1	A	F	B	1st	0	F	B
	B	F	B	1st	0	F	W
2	A	F	B	1st	75	F	B
	B	F	B	2nd	67	F	B
3	A	F	B	1st	0	F	W
	B	F	W	2nd	0	F	B
	C	F	B	2nd	73	–	–
4	A	F	B	1st	81	F	W
	B	F	B	2nd	81	F	B
6	A	F	W	2nd	0	F	W
	B	F	W	2nd	0	F	B
	C	M	B	2nd	0	–	–
8	A	F	B	1st	65	F	B
	B	F	B	1st	36	M	B
	C	F	B	1st	60	F	B
	D	F	B	2nd	50	F	B

Although control subjects were identified during both years of the project, those for whom data are reported here were selected just prior to the beginning of the second academic year. With the exception of the first grade pupils, the experimental and control subjects were matched on the basis of reading scores obtained the previous April on the Metropolitan Achievement Tests.

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2	A	F	B	1st	75	F	B
	B	F	B	2nd	67	F	B
3	A	F	B	1st	0	F	W
	B	F	W	2nd	0	F	B
	C	F	B	2nd	73	-	-
4	A	F	B	1st	81	F	W
	B	F	B	2nd	81	F	B
6	A	F	W	2nd	0	F	W
	B	F	W	2nd	0	F	B
	C	M	B	2nd	0	-	-
8	A	F	B	1st	65	F	B
	B	F	B	1st	36	M	B
	C	F	B	1st	60	F	B
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The teachers of the 16 experimental classes served on a voluntary basis within the standard framework of a public school setting. Eight of the teachers participated in the study from its inception, while the remaining eight

participated only during the second year. At the beginning of the second year, the 14 control teachers were selected by their respective principals from the available faculty at the appropriate grade levels. Most of the experimental and control teachers were female and black (see Table 1), with previous classroom experience of from one to 13 years. A paraprofessional aide was available to each experimental and control teacher for approximately 90 minutes per day to assist with clerical and logistical tasks.

Most of the training of the eight new experimental teachers was accomplished in a three-week workshop during the summer preceding the second year of the project. (The eight experienced teachers had already participated in a similar two-week workshop prior to the first year -- see Summer Training, Year I). In order to take best advantage of the summer training, for Year II, the experimental teachers began using the success technique during the first week of school. There was no baseline period during Year II.

Project Staff

Two lead teachers were added to the project staff before the beginning of the second year. One worked during Year II with the middle school teachers, the other with the elementary teachers. With the exception of these two additions the project staff remained as it was in the first year (see Project Staff under Method Year I.)

Treatment

During the first year of operation, three principal components of the success technique evolved: a positive reinforcement system, a classroom arrangement, and a curriculum. The technique as it had evolved during Year I was reinstituted during the second year. Because these three interacting components were applied concurrently so that no individual appraisal is feasible, they are evaluated as a single entity. A detailed description of each of the three components is contained in the Method section for Year I. However, several changes in the reinforcement system were made for Year II and are outlined below:

For the first six to eight weeks of school, the positive reinforcement of desirable classroom conduct was emphasized in an effort to increase the frequency of on-task behavior and to decrease the frequency of disruptive behavior. On-task behavior was defined as apparent attention to assigned academic tasks, while disruption was any unsolicited behavior serving to distract pupils from academic tasks, e.g., physical contact or inappropriate social conversation among pupils. Appropriate classroom behavior in the elementary classes was stipulated by the following set of conduct rules agreed upon by the elementary teachers during the summer workshop: (1) Stay in your seat; (2) Work hard; (3) Pay attention; (4) Raise your hand. The rules agreed upon by the middle school teachers were: (1)

Pay attention; (2) Have necessary tools for work; (3) Stay on task; (4) Raise your hand for recognition.

The rules were displayed in every experimental classroom and the teacher used them as guidelines. She concentrated on consistently and frequently reinforcing her students for following these rules. In fact, the display of rules in the classroom was intended more to remind the project teacher of her reinforcement responsibilities than to direct student behavior. If they are reinforced or if they see someone else reinforced for following it, students learn to appreciate a rule.

Although these behavioral guidelines were common across classes, each teacher was encouraged to interpret them in accordance with her individual teaching style and to relate her precise interpretation to her pupils on the first day of school. Some teachers, for example, chose to specify that their pupils remain in their seats except when granted permission to move; others indicated to their pupils that they could circulate freely within the classroom provided they were engaged in an academic task. Within their respective classrooms, the teachers were consistent in the specification and execution of behavioral contingencies. Once desired conduct was established within a class, the emphasis shifted strongly to the reinforcement of academic behavior.

Throughout the first five weeks of school, the quantity of tickets distributed in the middle school was gradually

reduced as desired social behaviors were established and -in the case of second-year pupils — re-established. During September, then, reinforcement was dispensed less and less frequently in order to establish an intermittent schedule of reinforcement — a schedule which is very effective in maintaining behavior. In the elementary schools an intermittent schedule was established by requiring the pupils to earn more and more checkmarks in order to complete reward cards. The number of checkmarks per card increased progressively from 25 to 50 to 100 to 150.

A greater variety of non-tangible rewards was made available to project teachers in mid-October when the project's first activity room was opened at Wesley. Activity rooms were also opened at Whitefoord and Coan in early December. Project pupils at Wesley and Whitefoord were able to trade tokens for free time in the activity rooms, which were supervised by paraprofessional aides and stocked with such fun items as games, toy cars, comic books, sewing kits, doll houses, dolls, embroidery sets, Tinker Toys, and Lincoln Logs. A pupil could gain entry to an activity room for 25 minutes by completing a 150-checkmarked card. Checkmarks were earned, for the most part, by the successful completion of assigned academic tasks. It was possible for each elementary project pupil to visit an activity room twice each week.

The activity room at Coan continued not only games, magazines, and puzzles, but also records for listening and

dancing. As in the elementary school, the middle school pupils' entry was contingent upon academic performance. A pupil could visit the room for 20 to 30 minutes by fulfilling a contract which he had negotiated with his teacher. The contract was an agreement to complete certain assignments over a four-day period at a mastery level of 90 per cent. It was also possible for the pupil to visit the activity room on other days of the week by trading in tickets earned for either following the class rules or for academic performance other than that specified in the contract.

Activity reinforcers other than the activity rooms were available at both the elementary and the middle school levels. The elementary pupils could trade in tokens for the privilege of assisting the teacher for a week in such capacities as room monitor, playground monitor, chalkboard monitor, flag salute monitor, and "mini-teacher" or tutor. The middle school pupils could earn the right to tutor their peers and to take field trips.

Although there had been some concern that the pupils would find the transition from tangible to non-tangible rewards unpalatable, there were no apparent detrimental effects, perhaps because there was a four-to-six-week overlap between the two types of reinforcement and the pupils had been told of impending change six weeks in advance. Immediately prior to the final conversion to activity reinforcers, the classroom held auctions to

dispose of remaining tangible rewards. Through the remainder of the year, tokens could be exchanged only for activity reinforcers and a limited assortment of school supplies, such as pencils and notebooks.

Summer Training

The training of the new teachers for Year II was accomplished in a summer workshop similar to the one preceding the first year of the project (a description of the workshop is presented in the Method section for Year I). In order to facilitate a positive attitude toward the project on the part of the new trainees, three things were done differently during the second year workshop. First, training was more heavily weighted toward the philosophy behind the technique. Second, Year I teachers were employed to assist in the training so that new teachers could be exposed to their attitudes about the technique. And third, teachers were given more applied training with summer school students in a classroom setting so that they could better understand the procedure from the practical perspective of the classroom.

Measures

of Pupil Varibles

The effects of the success technique on the project pupils were measured in four general areas: classroom

behavior, academic aptitude, achievement, and attitude toward self and school.

Pupil behavior in the classroom, or conduct, was assessed by means of systematic observations conducted daily in all experimental and control classes during the first three weeks of school and twice-weekly for the remainder of the school year except during testing and holiday periods. Trained observers collected data for on-task behavior, i.e., attention to assigned academic tasks and disruptive behavior (Copies of the in-class observation forms are in Appendix B).

Disruption. During 15-minutes, the data-gatherer continuously scanned the entire class for instances of disruptive pupil behavior. In general, disruption encompassed any unsolicited pupil behavior serving to distract other pupils from academic tasks: talking or being out of seat without permission; generating loud noises; and disturbing other pupils either verbally, or by means of physical contact, or by handling another pupil's possessions. A single pupil could not be observed for disruption more often than once every ten seconds. The criterion measure was the average number of disruptions per pupil per 15 minutes, obtained by dividing the total number of disruptions recorded by the number of pupils present during the observation session.

Attention. Attentive behavior was also observed for a total of 15 minutes. One-third of the pupils assigned an academic task were observed during each of three five-minute periods, with the focus being on their attention. Each pupil was observed for attentive behavior one time only for 20 seconds. The data-gatherer recorded the numbers of seconds during which the pupil was off-task; i.e., during each 20-second interval the behavior of one pupil was observed and the amount of time apparently devoted to other than academic tasks was recorded. Each pupil observed was classified as INVOLVED (0-5 second- off-task), MEDIUM INVOLVED (6-15 seconds off-task), or UNINVOLVED (16-20 seconds off-task). The criterion measure was the percentage of time on-task for the entire class, calculated by adding the number of pupils classified as INVOLVED to one-half of the number classified as MEDIUM INVOLVED, then dividing the sum by the total number of pupils observed, and multiplying the quotient by 100.

As in Year I, academic aptitude was assessed by the California Short Form Test of Mental Maturity (CTMM).

Academic achievement was measured by the California Achievement Tests (CAT).

Attitude toward self and school was measured by the Coopersmith Self-Esteem Inventory (Form B), the Crandall Intellectual Achievement Responsibility Questionnaire, and the Fitt Attitude Toward School Questionnaire. All these instruments were used assess attitude toward self and

school during the first year of the project, and each is described in the Method section for Year I. In addition to these three instruments, the Crandall Personal Reaction Inventory (PRI) was also administered during Year II. The PRI measures the extent to which subjects respond to instruments in the socially accepted direction instead of giving honest and open answers.

Of Teacher Variables

During the period from September, 1971, through May, 1972, teacher behavior was monitored in the classroom to determine the extent to which the success technique was being applied. Data were collected on the frequency of teacher punishment and reinforcement. Except during holidays and testing periods, in-class observational data were gathered daily for all project and control teachers during the first three weeks of school and twice-weekly thereafter (Copies of the in-class observation forms are in Appendix B.)

The average number of positive reinforcements administered per student in a 15-minute period constituted a criterion measure, which was obtained by dividing the total number of reinforcements administered by the number of pupils present during the observation session. A second criterion measure consisted of the total number of instances of punishment.

Teacher behaviors recorded as positive reinforcement included verbal praise, positive physical contact, granting of privileges, and administration of tangible rewards such

as candy or tokens (which were administered only in the experimental classes). Punishment included: criticism stated explicity or implicity through threats of consequences, voice tone, facial expression, aversive physical contact with pupils, withdrawal of pupil privileges, and isolation of pupils.

Testing Procedures

In-Class Observations

Five black, female paraprofessional data-gatherers trained by one of the behavior management technicians systematically observed teacher and pupil behavior. During the first three weeks of school, data were collected daily in all experimental and control classrooms. During the remainder of the year, data were gathered twice weekly. For a given class, the observation period lasted approximately 45 minutes.

During a 45-minute observation session, the relevant behaviors were observed three times in structured 15-minute sequences in order to obtain more typical behavior samples. Within a single 15-minute sequence, data were obtained using three different procedures to observe and record teacher reinforcement and punishment, pupil disruption, and pupil attention, in that order. (A data sheet on which these observations were recorded is reproduced as Appendix B.)

Observation periods were varied from morning to afternoon. Class time not devoted to academic activity was not appropriate for observation. Further, if for some reason -- such as a principal's voice over the intercom or the arrival of visitors into the classroom -- academic activity was interrupted, the observation stopped until academic behavior was again the appropriate behavior for the class.

While in the class for the purpose of obtaining data, observers were not to interact with the class or the teacher any more than was absolutely necessary. It was desirable that the class come to ignore the observer and take her presence for granted.

Reliability coefficients were obtained periodically for the five data-gatherers by comparing their observations with the simultaneous observations of one of the behavioral management technicians. The majority of the resulting coefficients were above .80. The median coefficients (over 12 reliability checks) for reinforcement, punishment, disruption, and attention respectively were .94, .78, .90, and .88.

Achievement Testing

All experimental and control pupils except those in the first grade were administered the reading and arithmetic sections of the California Achievement Test as a pretest in September. All pupils, including those in the first grade, were posttested by means of the CAT in May. Each grade

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except the first was administered the level of the CAT comparable to the mean reading level attained by that grade on the posttest of the Metropolitan Achievement Test administered during Year I.

Testing of Attitude Toward Self and School

In September, all experimental and control pupils in the third and sixth grades were administered the Coopersmith Self-Esteem Inventory (Form B) and the Crandall Personal Reaction Inventory, while those in the fourth and eighth grades were administered the Fitt Attitude Toward School Survey and the Crandall Intellectual Achievement Responsibility Questionnaire. These instruments were again administered to the appropriate classes in May.

The project research assistant, the members of his staff, and the two behavior technicians administered the questionnaires. To minimize the importance of reading ability, the administrators read each item aloud to the subjects and keyed them when they were supposed to respond.

Academic Aptitude Testing

Appropriate levels of the California Short Form Test of Mental Maturity (CTMM) were administered by the classroom teacher to all experimental and control pupils as a pretest in September 1971, and as a posttest in April, 1972.

Results and Discussion

Effects of the Experimental Treatment on the Project Pupils

In-Class Pupil Behavior

1. Disruptive Behavior

The data gatherers recorded the occurrence of each instance of disruptive behavior during the observation period. These data are summarized in Figure 1. As shown in this figure, the level of disruption in the project classes was considerably below the level of disruption in the control classes at every point of comparison. The figure presents the mean number of disruptions per pupil during 15 minute intervals. Each of the 18 data points along the abscissa represents the average from a maximum of four observation sessions during a period of one week (over the first four weeks of school) or during a period of two weeks (over the remaining 32 weeks).

There was a significant difference in disruptive behavior between the project and control pupils, as revealed by an analysis of variance comparing the project and control classes by grade level (elementary versus middle) across the 36 week school year (F = 2.30, $p < .01$). There was, however, no difference in the

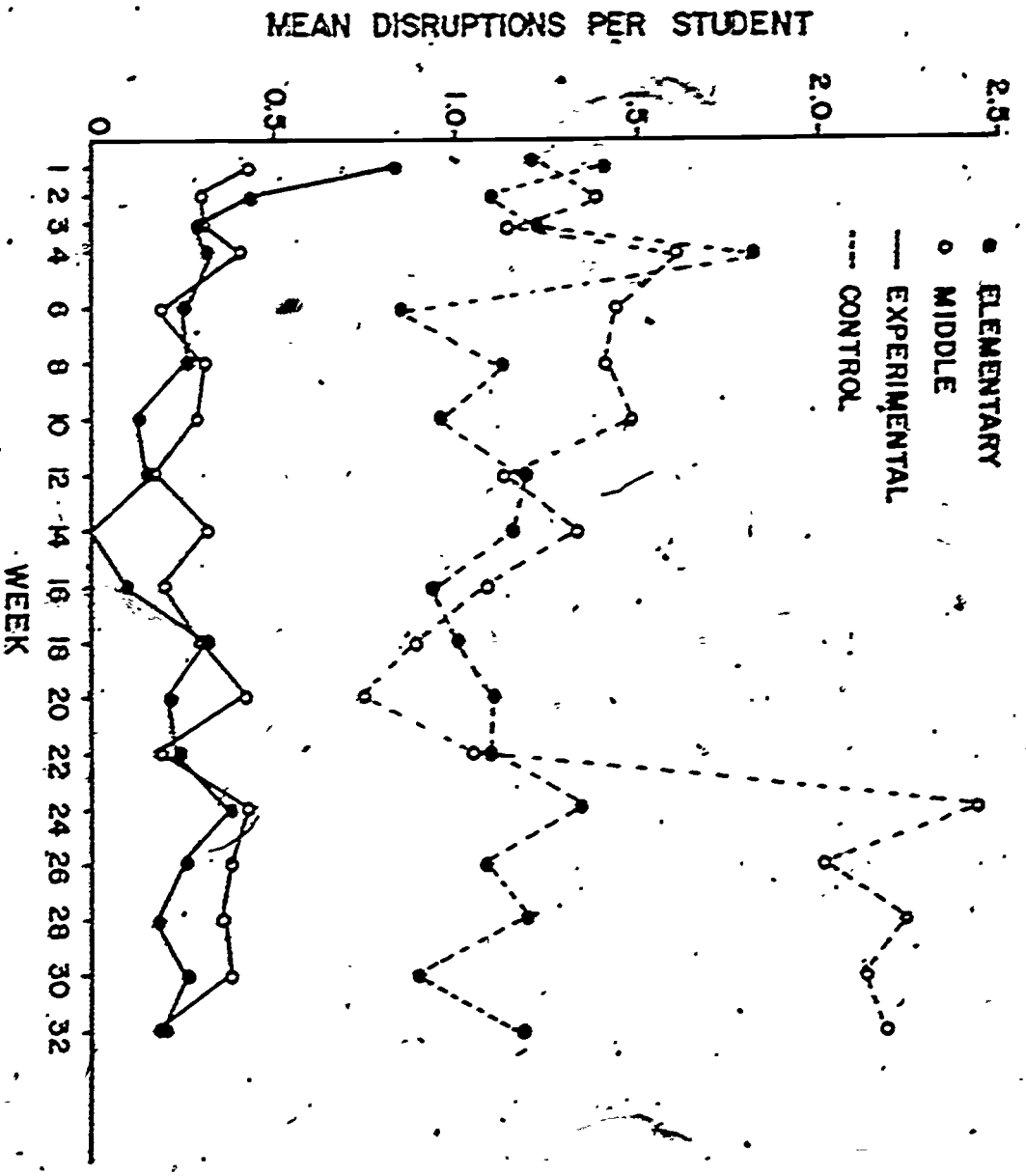
MEAN DISRUPTIONS PER STUDENT
0
0.5
1.0
1.5
2.0
2.5
WEEK
1 2 3 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
● ELEMENTARY
○ MIDDLE
— EXPERIMENTAL
--- CONTROL
R
R

Figure 1

level of disruption between the elementary and middle school project classes.

Although the number of disruptions per pupil was higher initially in the classes of the new project teachers compared to those of the experienced project teachers (0.84 versus 0.60 respectively during the first week of school), there was very little difference by the 36th week.

When all the project classes were considered jointly, there was a significant reduction in the average number of disruptions across the school year ($F = 34.0$, $p < .01$). In the elementary schools, disruptions in the project classes declined from 0.84 disruptions per pupil per 15 minutes during the first week of school to an average of 0.21 disruptions during the last two weeks of school. The average number of disruptions in the elementary comparison classes also declined slightly, from 1.41 disruptions the first week of school to 1.19 disruptions during the last two weeks. At the middle school level the average number of disruptions in the project classes fell from 0.43 to 0.23 over the course of the year. In the middle school control classes disruptions almost doubled during the school year, from 1.21 the first week of school to 2.20 by the end of the year. By the end of the first week of school there were fewer disruptions in the project classes at both elementary and middle school level than

in the control classes. Thus the project teachers were able to apply their behavioral management technique from the first day of school and to begin benefiting from their efforts almost immediately.

2. On-Task Behavior

The level of academic involvement in terms of the mean percent of time on task is presented in Figure 2. As in the previous figure, each of the 18 data points along the abscissa represents the average from a maximum of four observation sessions during a period of one week (over the first four weeks of school) or during a period of two weeks (over the remaining 32 weeks).

As revealed in Figure 2, the percentage of on-task behavior exhibited by the project classes is consistently higher than the percentage of on-task behavior exhibited by the control classes. The percentage of time involved during the first week of school was 71 per cent for project pupils. This percentage increased to 93 per cent at mid-year and declined to 85 per cent by the end of the year. The elementary control pupils, on the other hand, were task-involved 59 per cent of the time during the first week of school. This percentage rose to 68 per cent by mid-year and declined to a low of 53 per cent by the end of the year. Thus there was no overlap in the two

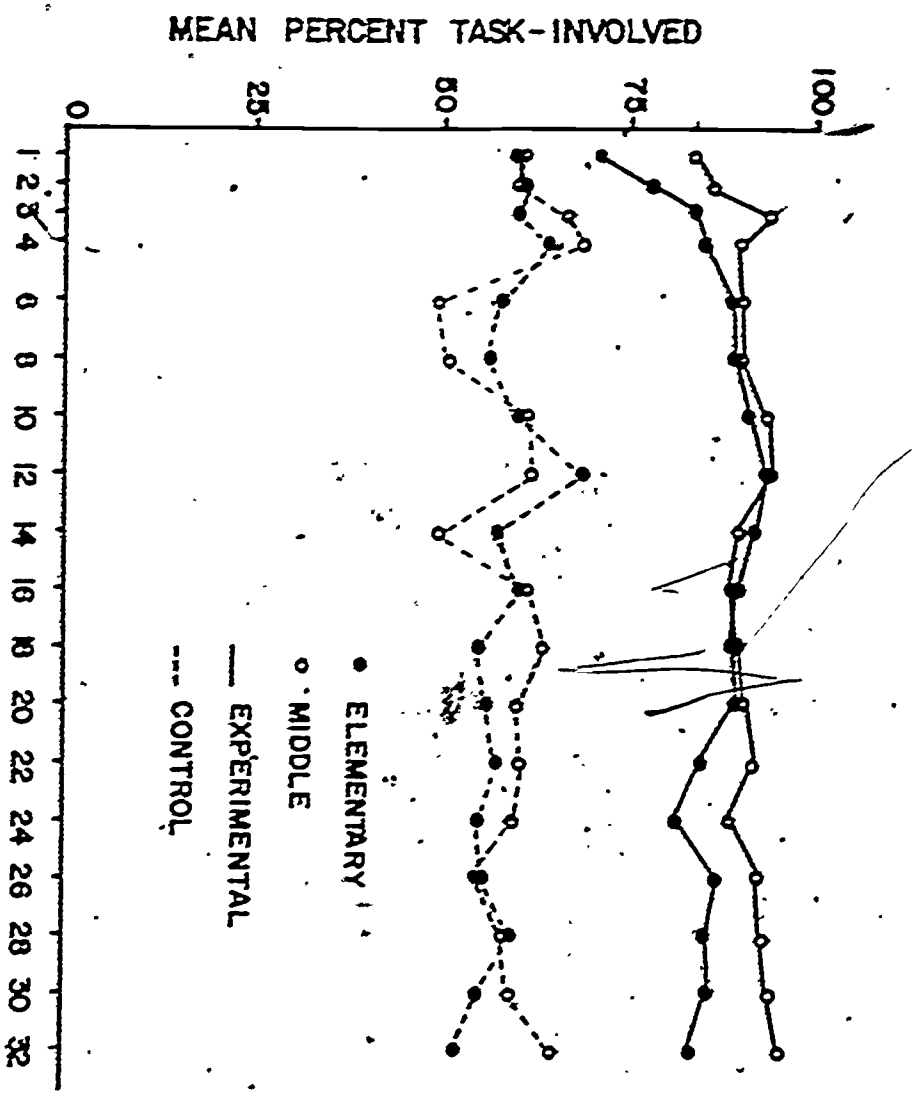
MEAN PERCENT TASK-INVOLVED
0
25
50
75
100
1 2 3 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
WEEK
● ELEMENTARY
○ MIDDLE
— EXPERIMENTAL
--- CONTROL

Figure 2

distributions of time involved in on-task behavior for the elementary pupil. The most task-involved period for the controls (68 per cent) was less than the least task involved period for the project pupils (71 per cent).

Task-involvement at the middle school level followed a similar pattern. The average amount of task-involvement for the project classes was 90 per cent as compared to 60 per cent for the control classes. By the third week of school, the percentage of time spent in on-task behavior had risen from 78 per cent the first week to 94 per cent. The lowest percentage of task involvement ever obtained for the remainder of the year was 88 per cent task-involved at mid-year. There was no decline from mid-year to the end of the year as exhibited by the elementary pupils. The percentage of task-involvement exhibited by the middle school control classes remained fairly consistent throughout the school year at 60 per cent (range: 49 to 68 per cent) task-involved. The differences in task-involvement between the project and control classes was statistically significant according to a 2 x 2 x 18 analysis of variance design. ($F = 60.89$, $p < .01$). In addition, the difference between project and control classes increased significantly across the school year ($F = 3.42$, $p < .01$).

Such behavioral changes are in themselves significant; the inner-city classroom has become a pleasant, success-oriented environment, and students appear willing, if not eager, learners. However, the experiences of the first year of the project suggested that simply reducing the level of disruption and increasing task-involvement did not guarantee changes in academic aptitude or achievement. Consequently, in the second year, teachers were encouraged to reinforce evidence of academic achievement almost exclusively once appropriate social behaviors were established.

Academic Aptitude

Because there was some indication during Year I that the success technique served to elevate academic aptitude (IQ), appropriate levels of the California Short-Form Test of Mental Maturity (CTMM) were administered to all project and control pupils in September and in May. The mean IQ scores and the mean gains in IQ for each grade level are presented in Table 2.

Table 2

Mean IQ Gain - September to May
California Short - Form Test of Mental Maturity

Grade		n	Sept. Mean IQ	May Mean IQ	Mean Gain in IQ
1	Project	35	98.60	98.49	-0.11
	Control	34	86.35	96.18	9.83
2	Project	38	86.03	94.21	8.18
	Control	44	86.11	92.00	5.89
3	Project	61	88.28	95.54	7.26
	Control	35	90.54	92.94	2.40
4	Project	36	91.69	105.56	13.87
	Control	43	85.86	87.70	1.84
6	Project	52	85.70	91.40	5.70
	Control	49	86.25	86.76	0.51
8	Project	76	71.63	74.67	3.04
	Control	106	74.66	74.88	0.22

The most impressive change occurred at the fourth grade, where the project pupils gained almost 14 IQ points in eight months, as opposed to a gain of less than two points for the control pupils. An analysis of variance indicated that the difference in gain between the two groups was reliable ($F = 26.69$, $p < .01$). Perhaps the outstanding performance of this group, as compared with both the control pupils and the project pupils at the other five grade levels, can be accounted for by the fact that 81 per cent of those children have been exposed to the success technique for two consecutive years. (See Table 1 for the percentages

of two-year project pupils at the other grade levels). Over the two-year period, this particular group of pupils has exhibited an average gain of 20 IQ points, from 85.69 in September, 1971, to 105.56 in May, 1972. The fourth grade pupils, then, have not only improved dramatically in tested academic aptitude but have exceeded the national average.

Although their gains were not as striking, the project pupils at each of the other grade levels, with the exception of the first, achieved greater IQ gains than the control pupils. The differences in gain were also statistically significant at the third grade level ($F = 6.02$, $p < .05$), and the difference at the sixth grade level ($F = 5.13$, $p < .05$), while the difference at the eighth grade level approached statistical significance ($F = 3.26$, $p < .10$).

Only at the first grade level did the control pupils outperform the project pupils, with a mean gain of almost 10 points versus a slight loss of one-tenth point. It is important to note, however, that the first grade project pupils began the year with a higher mean score (98.60 versus 86.35) and achieved a somewhat higher mean score on the posttest (98.49 versus 96.18).

In conclusion, the evidence indicates that the success technique, or certain aspects of it, had a beneficial effect upon academic aptitude. The project pupils at five of the six grade levels under consideration gained more in tested IQ than their control counterparts, with statistically significant gains at four of the six levels.

Academic Achievement

If project pupils are both less disruptive in class and more involved in assigned tasks than control pupils, they should progress more rapidly in their academic work. Moreover, their frequent exposure to positive reinforcement should have beneficial effects upon motivation and academic behavior. Thus, it was anticipated that project pupils would display more academic improvement than control pupils, as measured by standardized achievement tests. The following discussion is based on change scores between September and April administrations of the California Achievement Tests (CAT).

1. Reading

Three scores are reported for the CAT in Reading: Reading Comprehension, Reading Vocabulary, and Total Reading. Table 3 presents the mean change scores for project and control classes on these three subtests. Cursory examination of Table 3 reveals that project classes made greater gains at every grade level in Reading Comprehension and on Total Reading subtest. In addition, greater gains were made by project pupils on the Reading Vocabulary test except at the fourth grade level.

Table 3

Mean Change Scores - September to April
Reading Subtests of the California Achievement Tests

Grade		Reading Comprehension	Reading Vocabulary	Total Reading
2 & 3	Project	5.09	16.84	21.09
	Control	4.99	10.86	15.58
4	Project	10.62	4.33	14.96
	Control	7.96	6.57	14.52
6 & 8	Project	5.73	4.92	10.65
	Control	1.10	3.04	4.14

For the middle school classes (grades 6 and 8), an analysis of variances performed on the change scores indicated that the gains made by the project classes were highly statistically significant (Reading Comprehension: $F = 18.85$, $p < .01$; Reading Vocabulary: $F = 7.68$, $p < .01$; and Total Reading: $F = 18.93$, $p < .01$). The data for the sixth and eighth grades (and for the second and third grades) were analyzed jointly because the same form of the CAT was administered to both grades.

At the elementary school level, the analysis of variance indicated that the second and third grade project pupils made significantly greater gains than the control pupils on both the Reading Vocabulary subtest ($F = 17.43$, $p < .01$) and the Total Reading subtest ($F = 9.77$, $p < .01$). Although the average gain made on the Reading Comprehension subtest was greater

for the project pupils, this difference did not reach statistical significance.

At the fourth grade level, the project pupils made greater average gains on the Reading Comprehension and on the Total Reading subtests. These gains, however, were not statistically significant. On the Reading Vocabulary subtest, the control pupils made greater gains than project pupils, but these gains were not statistically significant either. It should be noted, however, that the fourth grade made higher scores on both the pretest and on the posttest for the Total Reading test.

The importance of introducing the success technique at an early grade level is suggested by the results of the CAT given to the project and control pupils at the end of the first grade. As may be observed in Table 4, the reading scores made by the project pupils in April were higher than the reading scores made by the control pupils in April.

Table 4

Posttest Scores on the Reading Subtests of the California Achievement Tests - First Grade

Grade 1	Reading Comprehension	Vocabulary	Total Reading
Project	31.14	52.41	58.64
Control	22.00	43.07	46.57

These differences in reading tests: Reading Comprehension (F = 11.52, $p < .01$), Reading Vocabulary (F = 10.42, $p < .01$), and Total Reading Achievement (F = 12.25, $p < .01$). Because most entering first graders do not know how to read, it was not feasible to administer a reading achievement pretest during September. Thus it must be assumed that project and control pupils were similar upon entering school. The project pupils did have a higher IQ as measured by the CTMM at the beginning of school year; however, the results of the mid-year testing session indicated that these IQ differences were minimal by January (mean IQ of first grade project pupils = 102.80, mean IQ of first grade controls = 100.40).

These data suggest the possibility that gains may be made more easily at the lower grade levels where pupils are exposed to the success technique early in their educational careers. This conclusion is suggested by the fact that first grade pupils made consistent gains and by the fact that the greatest difference in final reading level between project and control pupils occurred at the second grade level.

Table 5 presents the percentages of pupils making gains, losses, or no change between the CAT pretest and posttest. These percentages are broken down into elementary and middle school levels for both the project and control pupils. For the elementary and

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Table 5

Gains and Losses - September to April
California Achievement Tests Total Reading Scores

	Elementary Schools				Middle School			
	Project		Control		Project		Control	
	No. of Pupils	Percent of Sample	No. of Pupils	Percent of Sample	No. of Pupils	Percent of Sample	No. of Pupils	Percent of Sample
Gains	142	94.04	87	87.88	110	81.48	95	62.09
No Change	2	1.32	2	2.02	4	2.96	6	3.92
Losses	7	4.64	10	10.10	21	15.56	52	33.99

middle school classes, the percentage of project pupils making gains was higher than the percentage of controls making gains. In addition, the percentage of project pupils making losses was less than the percentage of controls making losses. There was a tremendous difference at the middle school level in the number of project and control pupils who made gains in Reading Achievement. While over four out of every five project pupils made a gain on the CAT in reading, only three out of every five control pupils made such a gain. At the elementary school level, one out of every ten control pupils suffered a loss, compared to one out of every twenty project pupils. At the middle school level, thirty-three per cent of the control pupils made a lower score on the posttest of the reading achievement test than they made on the pretest. Only 15 per cent of the project pupils demonstrated such losses. These data indicate that a very high percentage of pupils benefitted by having been in a Project Success classroom.

Table 6 presents the mean pretest scores, the mean posttest scores, the number of months gain, and the posttest reading level (grade equivalent) for the project and control pupils. As Table 6 indicates, the project pupils gained from five to thirteen months in reading from September to April, while the control pupils gained from one to six months. The grade

equivalents listed in Table 6 are based on the April test scores. Since the CAT was administered on mean reading level rather than on grade level, grade equivalent scores may be inflated. However, since both the project and control pupils were tested using the same test, these scores do convey the relative standing of the project pupils to the control pupils. It was only at the fourth and eighth grade levels that the mean reading level did not coincide with grade placement level.

Table 6

Total Reading Gain - September to April
California Achievement Tests

Grade		September Mean Scores	April Mean Scores	Gain in Months	Posttest G.E.
1	Project	-	58.64	7	1.7
	Control	-	46.57	5	1.5
2	Project	45.48	75.66	13	2.5
	Control	43.70	62.98	5	1.9
3	Project	58.31	72.95	6	2.3
	Control	65.17	76.64	5	2.5
4	Project	62.58	77.53	5	3.9
	Control	47.00	61.52	6	3.4
6	Project	56.65	66.00	5	5.0
	Control	55.76	63.03	3	4.8
8	Project	59.22	70.83	6	5.2
	Control	64.01	67.16	1	5.0

2. Arithmetic

Three scores are reported for the CAT in Arithmetic: Arithmetic Fundamentals, Arithmetic Reasoning and Total Arithmetic. The mean change scores for project and control pupils for these three subtests are presented in Table 7. Table 7 indicates that the average gains were higher for the project pupils than for the control pupils on all three subtests at the second, third, sixth and eighth grade levels.

Table 7

Mean Change Scores - September to April
Arithmetic Subtests of the California Achievement Tests

Grade		Arithmetic Fundamentals	Arithmetic Reasoning	Total Arithmetic
2 & 3	Project	10.89	8.32	19.21
	Control	8.99	7.49	16.36
4	Project	28.18	8.22	36.40
	Control	30.94	9.40	40.34
6 & 8	Project	7.64	3.65	11.29
	Control	3.68	2.74	6.43

For the middle school classes (6th and 8th grades) an analysis of variance performed on the change scores indicated that these gains were highly significant for the Arithmetic Fundamentals subtest ($F = 7.73$, $p < .01$) and for the Total Arithmetic scores ($F = 4.17$, $p < .01$). As for the Reading test, the data for the Arithmetic test at the sixth and eighth grades (as well as for the second and third grades) were analyzed

jointly because the same form of the CAT was administered to both grades.

At the elementary school level, the analysis of variance indicated that the gains made by the second and third grade project pupils, although greater than the gains made by the control pupils, were not significantly different from the gains made by the control pupils. At the fourth grade level, the control pupils made slightly greater gains than the project pupils on all arithmetic tests. These differences in gains, however, failed to be statistically significant. It should be noted that, as in the Reading Test, fourth grade project pupils made higher scores on both the pretest and posttest.

The differences in arithmetic achievement scores at the end of the first grade are worthy of note. Although subject to the same restrictions mentioned with regard to reading (i.e., no pretest was feasible), the project pupils exceeded the performance of the control pupils on all the arithmetic achievement tests. (See Table 8)

Table 8

Posttest Scores on the Arithmetic Subtests of the California Achievement Tests - First Grade

	Arithmetic Fundamentals	Arithmetic Reasoning	Total Arithmetic
Project	6.23	24.32	55.45
Control	3.50	20.45	42.45

These differences were highly significant for Arithmetic Fundamentals ($F = 6.40$, $p < .01$), Arithmetic Reasoning ($F = 429$, $p < .01$) and Total Arithmetic ($F = 9.22$, $p < .01$). The fact that highly statistically significant differences were obtained for all arithmetic as well as for all reading subtests strongly suggests the possibility that encountering a successful academic environment from the very first day of school can have a profound influence on the achievement of the first grade pupil. To follow the longitudinal effects of early exposure to a successful academic career will be of considerable interest.

Table 9 presents the percentages of pupils in both project and control classes that gained, lost, or made no change on the CAT in Arithmetic. These percentages are provided for both elementary and middle school classes. As may be observed in Table 7, there was little difference in percentages making gains or losses for the project versus the control classes. All pupils in both the project and the control classes made gains in the middle school, and over 90 per cent in both project and control classes at the elementary school level made gains. Thus performance for both groups was good. When it is considered, however, that many of the gain scores presented in Table 7 favor the project pupils over controls and that the analysis of variance confirm several of these differences

Table 9

Gains and Losses - September to April
California Achievement Tests Total Arithmetic Scores

	Elementary Schools				Middle School			
	Project		Control		Project		Control	
	No. of Pupils	Percent of Sample	No. of Pupils	Percent of Pupils	No. of Pupils	Percent of Sample	No. of Pupils	Percent of Sample
Gains	141	92.76	115	90.55	125	100.00	132	100.00
No Change	1	0.66	2	1.58	0	0.00	0	0.00
Losses	10	6.58	10	7.87	0	0.00	0	0.00

statistically, it may be stated that, while most pupils made a gain in their arithmetic achievement over the school year, the gains made by the project pupils were, in many cases, greater than the gains made by the controls.

Table 10 presents the mean arithmetic pretest scores, the mean posttest scores, the number of months gain and the posttest arithmetic achievement level (grade equivalent) for project and control pupils. As may be observed from the data presented in Table 10, the project pupils gain from 5 to 7 months in arithmetic achievement while the control pupils made gains anywhere from 2 to 13 months. At the second, fourth, and sixth grade levels the posttest grade equivalents for the project pupils were higher than for the controls. At the third and eighth grades, however, the control pupils enjoyed a slight advantage.

Table 10

Total Arithmetic Gain - September to April
California Achievement Tests

Grade		September Mean Scores	April Mean Scores	Gain in Months	Posttest G.E.
1	Project	-	55.45	6	1.6
	Control	-	42.45	3	1.3
2	Project	45.41	67.68	6	2.0
	Control	43.93	58.67	3	1.7
3	Project	56.56	73.62	7	2.3
	Control	63.32	81.74	13	2.9
4	Project	124.65	161.04	7	4.3
	Control	90.52	130.86	7	3.7
6	Project	48.39	61.20	7	5.9
	Control	47.64	51.71	2	5.4
8	Project	50.32	60.38	5	5.8
	Control	55.51	62.57	4	6.0

In summary, it may be noted that for both the reading and arithmetic subtests of the CAT, administered to several grade levels, there were highly statistically significant gains made by the project pupils over the course of the school year. In no instance was there a statistically confirmed gain in achievement favoring a control group. This achievement data, then, provides strong evidence that for this group of inner-city school pupils who participated in Project Success Environment the success technique has made a significant impact in promoting the level of achievement while countering academic failure.

Attitude Toward Self and School

From the beginning of Project Success Environment it was suggested that as inner-city children began to experience success in school their attitudes toward both themselves and school would improve. Specifically, it was hypothesized that project pupils, having experienced success throughout the school year as a result of the success technique, would come to have better self-concepts, more positive attitudes toward school, and be more internally oriented (i.e., they would begin to believe that they, rather than other people, are responsible for their academic successes and failures). Each of these hypotheses was tested with appropriate instruments:

1. Coopersmith Self-Esteem Inventory, Form B

It was hypothesized the one result of the teacher's praising and rewarding the children's correct responses and appropriate behavior while ignoring errors and disruptions would be an increase in the children's level of self-esteem.

Performance of project and control pupils on the Coopersmith questionnaire are presented in Table 11. Both experimental and control groups increased their self-esteem score by about five points over the school year. Thus, there were no significant differences in gain between project and control pupils. There were, however, significant differences between the third and sixth grades and between the responses of the male and

female pupils on both the pretest and the posttest. Whereas the sixth grade pupils had the higher self-esteem scores on the pretest, the third grade pupils had the higher scores on the posttest. Female pupils had significantly higher self-esteem scores than male pupils on both the pretest and the posttest.

Table 11

Coopersmith Self-Esteem Inventory

Grade		N	Pretest	Posttest	Change
3	Project	60	55.00	60.23	5.23
	Control	33	51.52	57.70	6.18
6	Project	58	57.97	56.48	-1.48
	Control	49	56.57	54.74	-1.84

It is interesting to note that pupils who had been exposed to the success technique for two years gained almost twice as many points on the Coopersmith in the one year period as the pupils who had been exposed for only one year (7.78 versus 4.14 points); the difference was, however, not significant. In conclusion, it is not possible to confirm the hypothesis that increased achievement will result in enhanced self-esteem, but it is clear that Project Success Environment does not have any negative effect on self concept.

2. Crandall Intellectual Achievement Responsibility (IAR) Questionnaire

The Crandall IAR assesses pupils' beliefs that they, rather than other people, are responsible for their intellectual-academic successes and failures.

a. Positive Internal Locus of Control

The positive scale measures the extent to which pupils accept responsibility for their academic successes. As may be observed in Table 12, there was no significant difference between project and control pupils in their willingness to accept responsibility for academic success ($F = 0.06$, ns). On both the pretest and posttest the eighth grade pupils were more willing than fourth grade pupils to assume the responsibility for success ($p < .01$). On the posttest there was also a sex difference. At the beginning of the year male pupils were slightly more inclined to accept responsibility for their school success; by the end of the year, female pupils were more willing to accept such responsibility ($F = 7.98$, $p < .01$ on Posttest).

Table 12

Crandall Positive Locus of Control

Grade		N	Pretest	Posttest	Change
4	Project	43	12.70	12.65	- 0.05
	Control	48	12.00	12.30	.30
8	Project	73	13.53	13.33	- 0.19
	Control	101	13.55	13.29	- .26

Negative Locus of Control

The negative scale measures the extent to which pupils accept responsibility for their academic failures. As may be observed in Table 13, there was a significant difference on the pretest between project and control pupils in their willingness to accept responsibility for their hypothetical academic failure. Over the course of the school year, project pupils became more willing to accept responsibility for their academic failures while the control pupils became less willing to accept such responsibility. Analysis of the change scores indicated that these changes were significant ($F = 7.42$, $p < .01$). This difference was the result of higher scores being made on the pretest by the control pupils than were made by the project pupils (pretest control mean: 11.006; pretest project mean: 10.155). On the posttest there was no difference between the project and control pupils. Thus the initial superiority demonstrated by the control pupils on this measure was lost. On both the pretest and the posttest, the eighth grade pupils were more willing to accept responsibility for their failures than were the fourth grade pupils.

Table 13

Crandall Negative Locus of Control

Grade		N	Pretest	Posttest	Change
4	Project	43	8.72	9.79	1.07
	Control	48	10.23	10.54	0.31
8	Project	73	11.00	11.30	0.30
	Control	101	11.38	10.61	-0.76

It may be noted that during Year I there was a significant improvement on the positive internal locus of control measure by the project pupils, whereas in Year II the significant change was made on the negative scale.

3. The Fitt Attitude Toward School Questionnaire

Results for the Fitt's questionnaire are presented in Table 14.

As can be seen in Table 14, there was a significant difference between the project and control pupils at posttest ($F = 4.409$, $p < .05$). The attitudes of the project pupils toward school were significantly improved. There were no differences between project and control pupils in their attitudes toward school when given the pretest in September. Thus the hypothesis that, as a result of of their more successful environment, the project pupils would gain a more positive attitude toward school was confirmed.

Table 14

Fitt Attitude Toward School (lower score indicates better attitude)

Grade		N	Pretest	Posttest	Change
4	Project	38	4.52	3.91	0.60
	Control	35	4.12	4.54	-0.42
8	Project	51	4.47	4.64	-0.16
	Control	88	4.56	4.86	-0.30

It may be noted that during Year I there was a significant improvement on the positive internal locus of control measure by the project pupils, whereas in Year II the significant change was made on the negative scale.

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8	Project	51	4.47	4.64	-0.16
	Control	88	4.56	4.86	-0.30

4. Crandall's Personal Reaction Inventory (PRI)

Because of the possibility that the pupils might respond to questionnaires in a socially accepted manner rather than in accordance with their own thoughts, Crandall's Personal Reaction Inventory was administered to third and sixth grade project and control pupils. The PRI consists of 47 yes/no items. As may be seen in Table 15, there was a highly significant difference between the project and control classes when the pretest was given in September ($F = 7.26$, $p < .01$). In September, the control pupils were more honest in their answers than were the project pupils. In April, there was no difference between the way project and control pupils responded to the PRI. Analysis of the change scores, however, did not reach statistical significance. It may also be noted that on the pretest there was a highly significant difference due to grade ($F = 77.74$, $p < .01$). This difference is due to the fact that third grade pupils are more prone to respond in a socially desirable manner to the questionnaire than sixth graders.

Table 15

Crandall Personal Reaction Inventory

Grade		N	Pretest	Posttest	Change
3	Project	60	32.57	32.18	- 0.38
	Control	34	26.59	29.06	2.47
6	Project	58	21.22	19.78	- 1.45
	Control	49	20.57	20.51	- 0.06

In summary, it should be noted that there was a significant change to a more positive attitude toward school by the project pupils. In addition, whereas the control pupils responded significantly more favorably on both the Crandall's Personal Reaction Inventory and on the Crandall's Negative Internal Score, these differences were lost over the course of the school year as the project pupils began to give more honest, rather than socially accepted, responses and as they began to accept more responsibility for their academic failures.

Effects of the Experimental Treatment on the Project Teacher's In-Class Behavior

One of the necessary prerequisites for providing a successful environment for pupils is the training of teachers in the use of the success technique. Consequently, the project teachers were given theoretical and practicum experiences designed to increase the number of rewards given for appropriate behavior and to decrease the number of punishments given for inappropriate behavior (by ignoring such behavior instead). In order to determine the extent to which the project teachers were, in fact, using the success technique, trained data gatherers made in-class observations of the teachers and recorded the number of reinforcements and punishments administered by both project and control teachers.

Frequency of Positive Reinforcement

The data for the 36 weeks of school are summarized in Figure 3. The figures present the mean number of reinforcements per pupil during 15 minute intervals. Each of the 18 data points along the abscissa represents the mean from a maximum of four observation sessions during a period of one week (over the first four weeks of school) or during a period of two weeks (over the remaining 32 weeks).

An examination of Figure 3 reveals that the project teachers administered considerably more reinforcements than did the control teachers. The elementary teachers dispensed an average of 1.30 (range: 0.82 to 9.78) reinforcements per pupil during a 15 minute interval while the control teachers administered few reinforcements (mean: 0.20, range 0.04 to 0.38). While the rate of reinforcement was not quite as high in the middle school as in the elementary, the project teachers still averaged almost one reinforcement per pupil per 15 minutes (mean: 0.92, range: 0.46 to 1.77) while the reinforcement rate of the control teachers was almost negligible (mean: 0.07, range: 0.00 to 0.60). Clearly, then, the rate of reinforcement of the project teachers was four to five times greater than the rate of reinforcement of the control teachers.

In the elementary control classes, the incidences of positive reinforcement began to drop during the second week, approaching zero by the fourteenth week. In the middle

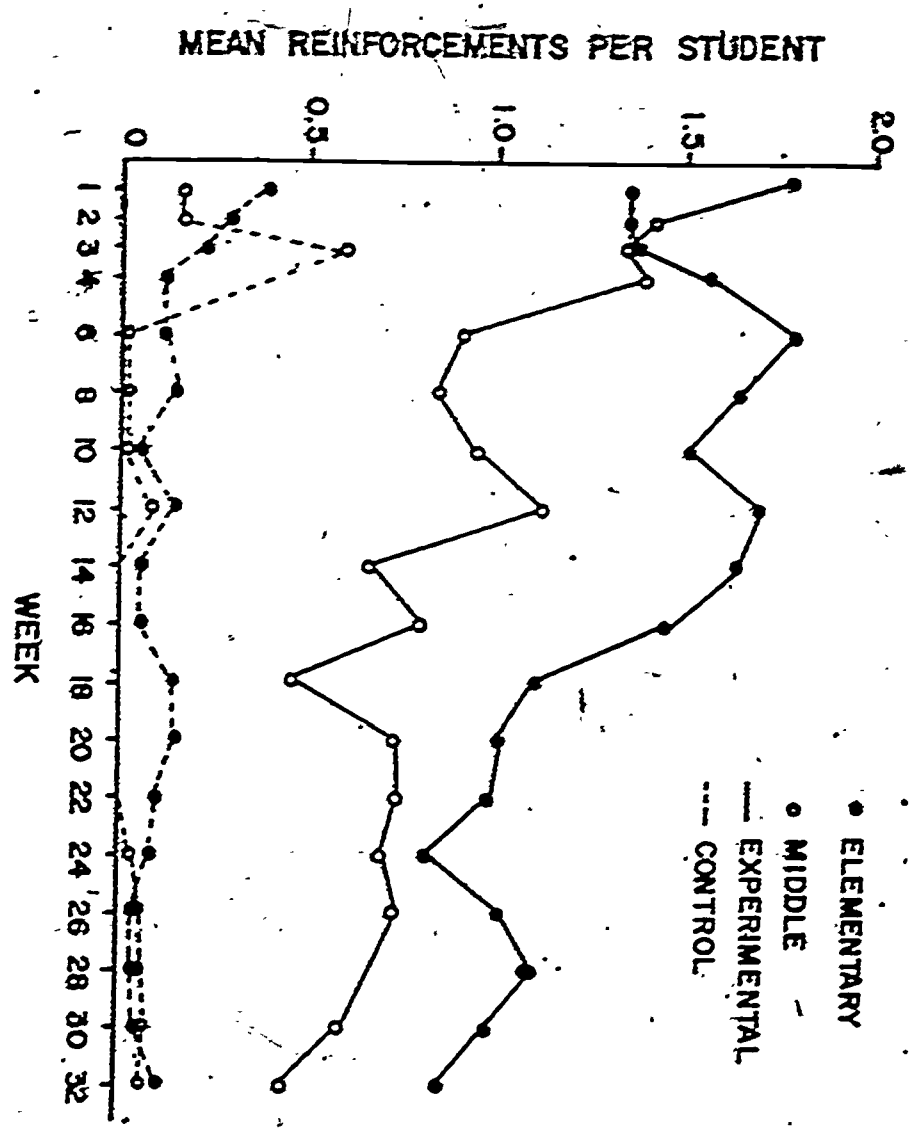
MEAN REINFORCEMENTS PER STUDENT
0
0.5
1.0
1.5
2.0
WEEK
1 2 3 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
ELEMENTARY
MIDDLE
EXPERIMENTAL
CONTROL

Figure 3

school control classes, incidences of positive reinforcement were virtually non-existent after the third week.

An analysis of variance was performed on frequency of reinforcement delivery with treatment group (project versus control), grade level (elementary versus middle) and observation interval (18) as factors. Consistent with the above observation, project teachers administered significantly more reinforcements than control teachers (F = 36.98, $p < .01$). There was no difference in the frequency of reinforcement of the elementary versus the middle school project teachers. There was, however, a significant decline in the amount of reinforcement administered during the school year (F = 4.63, $p < .01$). A comparison of the performance of new versus experienced project teachers made at mid-year indicated that there was no difference in the frequency with which reinforcement was delivered by the two groups (F = 0.265, ns).

These data provide strong evidence that the project pupils were exposed to more positive reinforcement than the control pupils and that they continued to receive this reinforcement throughout the school year.

Frequency of Punishment

Figure 4 is a representation of the average number of punishments per fifteen-minute interval delivered by project and control teachers by grade level. As shown in Figure 4, project teachers were much less punitive than control

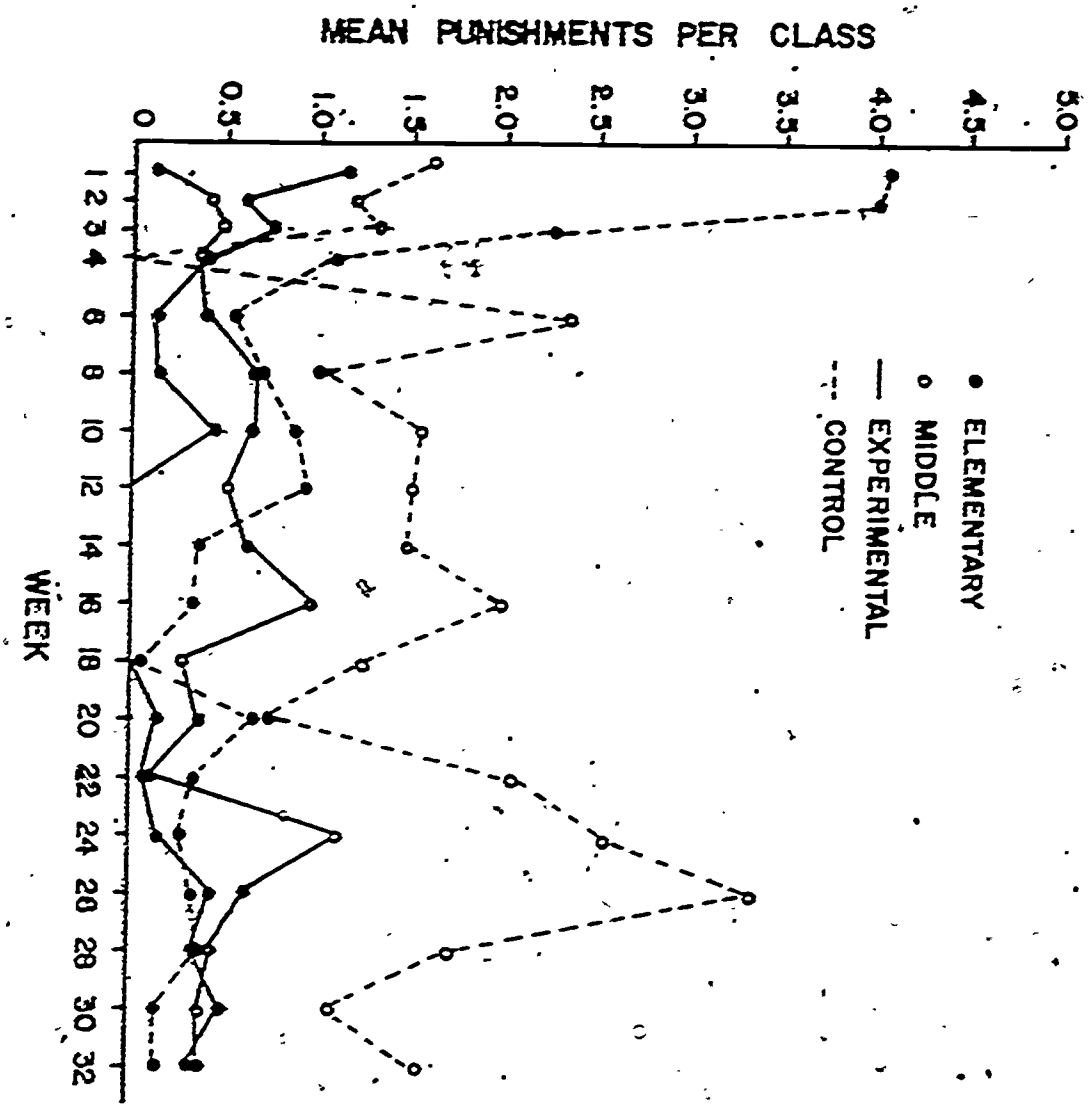
MEAN PUNISHMENTS PER CLASS
0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
4.5
5.0
WEEK
1 2 3 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
ELEMENTARY
MIDDLE
EXPERIMENTAL
CONTROL

Figure 4

teachers, particularly during the first weeks of school. For the first two weeks, project teachers at both elementary and middle schools administered fewer than one-fourth as many punishments as control teachers. The rate of punishment declined over the school year for all groups. At the elementary level, project and control teachers punished at about the same rate during the last two weeks, while at the middle school level controls continued to administer more punishment throughout most of the year. In line with these observations, an analysis of variance performed on frequency of punishment delivered with treatment, grade level, and observation interval as factors, yielded significant effects for treatment ($F = 3.35$, $p < .01$). In addition, grade level and observation interval interacted ($F = 4.20$, $p < .01$) indicating the greater decline in punishment rate at the elementary level than at the middle school.

The data-gatherers recorded the frequency of all forms of punishment administered to project and control pupils during the observation periods. Over the entire school year, the average number of punishments administered by the project teachers was far less than the average number of punishments administered by the control teachers. Whereas the elementary control teachers administered, on the average, approximately one punishment per 15 minutes (0.28 punishments per pupil per 15 minutes), the punishment delivered by the project teacher was almost negligible. See Table 16.

Table 16

Mean Incidences of Punishment
Per 15 Minutes

	Project Classes	Control Classes
Elementary School	0.28	1.00
Middle School	0.46	1.58

In the middle school, both the project and the control teachers delivered more punishments than their elementary school counterparts. However, the average number of punishments delivered by the project teachers was still far less than the average number of punishments delivered by the control teachers. Whereas project teachers delivered about 0.46 punishments per 15 minutes, the control teachers delivered 1.58 punishments per 15 minutes. Clearly, then, at both the elementary and the middle school levels, the project teachers delivered less than a third of the number of punishments delivered by the control teachers.

Summary, Year II

The observational data indicate that the project pupils were exposed to significantly more positive reinforcement than their counterparts in the control classes. Althpugh the rate of punishment was relatively low in both project and control classes, incidences of punishment in the project

classes were almost non-existent, less than one-third the rate in control classes. On the average, the project teachers rewarded their classes from 16 to 46 times for each incident of punishment. In contrast, the control classes received an average of only 8 to 10 rewards per punishment. The project teachers, then, were effectively trained in the use of the success technique. They maximized success experiences while minimizing failure experiences in their classrooms.

The project staff hypothesized that the success technique would reduce disruptive behavior in the classroom while increasing attention to assigned academic tasks. The staff's hypotheses were confirmed. In-class observations were made twice weekly by data gatherers in both project and control classrooms. Two behavioral measures were taken during the observation periods: the number of disruptive behaviors in a typical 15 minute period and the per cent of time the pupils appeared to devote to assigned academic tasks.

The observational data clearly indicated that the project pupils in both the elementary and middle schools were significantly less disruptive in class than the control pupils. In addition, the level of disruption in the project classes declined significantly over the school year. During the first week of school there were, on the average, almost two incidences of disruption in the control classes for each incident in the project classes. By the last two weeks in

school, there were 12 disruptive incidences in the control classes for each incident in the project classes.

The project pupils also devoted significantly more time to assigned academic materials during the observational periods. For the most part, the attention level in the project classes increased during the first few weeks of school and remained at a high level thereafter. The attention level for the control classes was relatively low throughout the school year. During the first week of school, the elementary project classes were on-task an average of 71.0 per cent of the time as contrasted with the elementary control classes which were on-task 59.3 per cent of the time. In the middle school, the project and control classes were on-task 78.4 per cent and 67.5 per cent of the time respectively. From that point, there was an increase in on-task behavior in the project classes which gradually stablized at approximately 90 per cent in both the elementary and middle schools. In contrast, the on-task behavior in the control classes continued to be a good deal lower and more erratic, ranging from a high of 68 per cent to a low 48 per cent.

From the in-class observation data, it is apparent that the success technique did indeed foster desirable social behavior in the classroom. This finding parallels both the results of in-class observations during Year I (See Summary Year I, p. 85) and the results of a pilot study in which the success technique was applied on a school-wide

basis in an elementary school having a pupil population similar to the project population. Thus, there is little doubt that the success technique can, and did, establish an appropriate environment for academic achievement.

Because there was some indication during Year I that the success technique served to elevate academic aptitude (IQ), appropriate levels of the California Short-Form Test of Mental Maturity were administered to all project and control pupils in September and May. The evidence indicated that the success technique had a beneficial effect upon academic aptitude. The project pupils at five of the six grade levels under consideration gained more in tested IQ than their control counterparts, with statistically significant gains at four of the six levels.

The results of the first year of the project (See Summary Year I, pp. 85-86) suggest that increasing pupils' apparent attention to academic tasks and lowering the disruptive level of behavior do not guarantee improvement in academic performance. Thus in the second year of the project, project pupils were heavily reinforced for academic successes. As soon as disruptive behavior was reduced and task-involvement was high, reinforcement was made contingent upon academic performance. As a result of this change from Year I to Year II, it was hypothesized that project pupils would make significant gains in academic achievement.

Academic achievement in the areas of reading and arithmetic was measured by means of the California

Achievement Tests (CAT) administered to all project and control classes in September and in April. The project pupils made higher gains on all the reading subtests at all grade levels except one (Reading Vocabulary at the fourth grade). Two of the three gains at the second and third grade levels and all of the gains at the sixth and eighth grade levels were statistically significant. At the fourth grade level, gains on two of the three subtests were in the right direction but did not reach statistical significance. The CAT was administered to the first grade project and control pupils as a posttest in April. The first grade pupils scored significantly higher on all the reading subtests.

At both the elementary and the middle school levels more project pupils made gains than control pupils and fewer made losses. In terms of grade equivalents, the project pupils gained from five to thirteen months while the control classes gained one to six.

In arithmetic, project pupils made higher gains at the second, third, sixth, and eighth grade levels on all the arithmetic subtests. Two of these gains at the sixth and eighth grade level were statistically significant. When given the CAT as a posttest in April, first grade project pupils scored significantly higher on all the arithmetic subtests than did first grade control pupils. In terms of grade equivalents, the project pupils gained anywhere from five to seven months in arithmetic achievement while the controls gained from two to thirteen months.

In summary, the application of the success technique throughout the school year produced a more reinforcing, less punishing classroom environment with few disruptions and a high degree of task involvement, increased academic aptitude, and greater academic achievement than traditional methods of teaching. Thus in each of these areas of concern, the data indicate that the success environment better meets the needs of inner-city teachers and pupils than traditional methods.

It is often argued that the failures experienced by the inner-city child not only affect his performance but also alter his perceptions of his school and himself. The project staff hypothesized that the success technique might counteract these psychological effects. For this reason, project and control pupils were given: the Pitt Attitude Toward School, the Crandall Intellectual Achievement Responsibility Questionnaire, the Crandall Personal Reaction Inventory, and the Coopersmith Self-Esteem Inventory, Form B. The results indicated that project pupils became more positive in their attitude toward school between September and May. Project pupils were also more willing to accept responsibility for their academic failures than controls. On the other hand, project and control pupils did not differ in their self-esteem or in the social desirability of their responding. Thus the hypotheses of the project staff with respect to these psychological measures were partially confirmed. It might be added that in no case was the effect

of the success technique psychologically harmful and on two measures (the Fitt Attitude Toward School Questionnaire and the Crandall Personal Reaction Inventory), significant improvements were made.

In addition, questionnaires were administered to project teachers, pupils and parents. The responses to these questionnaires indicated that, in general, all three groups liked the project, and felt that it facilitated academic achievement and made school more enjoyable. Almost all the respondents expressed a desire that the project be continued.

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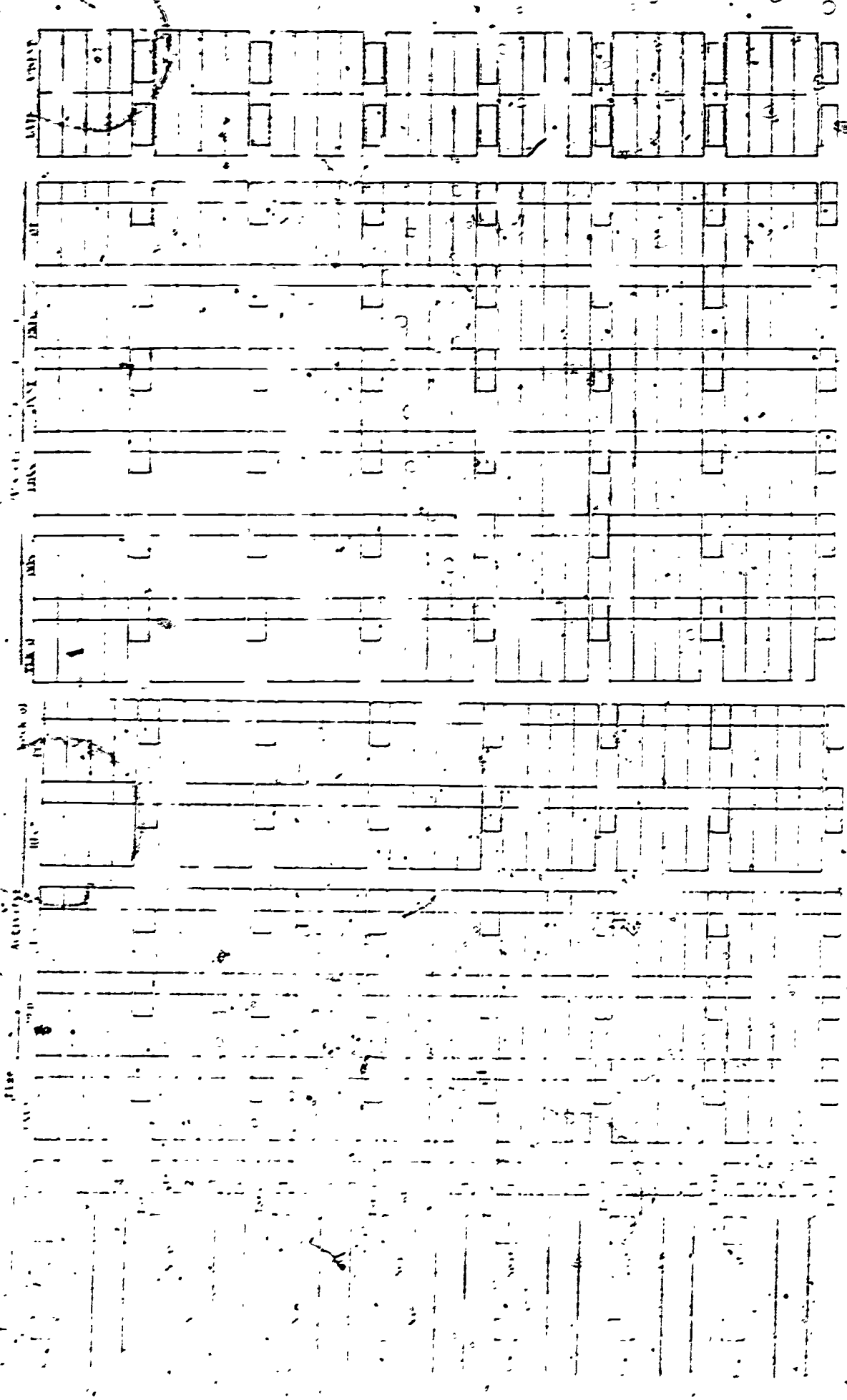
APPENDIX A

Teacher and Student Observation Sheets - Year I



Student Observation Form

Teacher _____ Grade _____ School _____ Week _____ Activity _____

DAY	PRAISE COMMENTS	+FACIAL ATTENTION	+PHYSICAL CONTACT	GRANTING PRIVILEGES	TANGIBLE	OTHER
1						
2						
3						
4						
TOTALS						

REINFORCE

B-5	CRITICAL COMMENTS	-FACIAL ATTENTION	-PHYSICAL CONTACT	WITHDRAWING PRIVILEGES	TIME OUT	OTHER
1						
2						
3						
4						
TOTALS						

PUNISH

E	INSTRUCTION INDIVIDUAL	GROUP	CLASS	HOUSE-KEEPING	OTHER
1					
2					
3					
4					
TOTALS					

TASK

APPENDIX B

Teacher and Student Observation Form - Year II

Project Success Environment

IN-CLASS OBSERVATION (ICO) RECORDING SHEET

TEACHER: _____ A.M. ☐ P.M. ☐

DATE: _____ No. Present: _____

REINFORCEMENT															
Academic						Conduct									
1	2	3	4	5	6	1	2	3	4	5	6				
7	8	9	10	11	12	7	8	9	10	11	12				
13	14	15	16	17	18	13	14	15	16	17	18				
19	20	21	22	23	24	19	20	21	22	23	24				
25	26	27	28	29	30	25	26	27	28	29	30				
31	32	33	34	35	36	31	32	33	34	35	36				
37	38	39	40	41	42	37	38	39	40	41	42				
43	44	45	46	47	48	43	44	45	46	47	48				

PUNISHMENT			
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32

TOTAL REINFORCEMENT = _____

DISRUPTION														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90

ATTENTION																	
INVOLVED (0-5)						MED. INVO. (6-15)						UNINVOLVED (16-20)					
1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
7	8	9	10	11	12	7	8	9	10	11	12	7	8	9	10	11	12
13	14	15	16	17	18	13	14	15	16	17	18	13	14	15	16	17	18
19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24
25	26	27	28	29	30	25	26	27	28	29	30	25	26	27	28	29	30

NO. INVOLVED: _____ + 1/2 NO. MED. INVOLVED: _____ = _____ % OF TASK

% OF TASK: _____ ÷ NO. OBSERVED: _____ = _____ % INVOLVED

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