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AN EVALUATION OF STAR, OR THE EFFECTS OF TRAINING AND DEPUTIZING INDIGENOUS ADULTS TO ADMINISTER A HOME-BASED TUTORING PROGRAM TO FIRST GRADERS IN AN URBAN DEPRESSED AREA.

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TO RAISE THE LITERACY LEVELS OF DISADVANTAGED CHILDREN THROUGH THE USE OF INDIGENOUS NONPROFESSIONALS IN A HOME-BASED TUTORING PROGRAM THE SUPPLEMENTARY TEACHING ASSISTANCE IN READING (STAR) PROGRAM OFFERED READING READINESS INSTRUCTION TO 490 FIRST-GRADE CHILDREN OF LOWER-CLASS PUERTO RICAN ORIGIN. MONOLINGUAL AND BILINGUAL NONPROFESSIONALS EITHER TUTORED THE CHILD IN THE HOME WITH THE PARENT OBSERVING AND SUPPLEMENTING THE INSTRUCTION OR TAUGHT THE PARENT DIRECTLY AND HAD NO CONTACT WITH THE CHILD. THE LESSONS IN READING READINESS WERE ORGANIZED AROUND CODE BREAKING, FORMAL LANGUAGE, AND VISUAL-PERCEPTUAL EXERCISES. THE STAR PROGRAM WAS EVALUATED AFTER SIX MONTHS ON THE BASIS OF THE SCORES ON NINE TESTS OF 19 STAR CHILDREN, 12 STAR DROPOUTS, 90 READING CLINIC CHILDREN WHO RECEIVED DIRECT HELP FROM READING SPECIALISTS, AND 23 CONTROLS. THE PREPROGRAM FUNCTIONING LEVEL OF THE STAR CHILDREN WAS NOT AVAILABLE FOR COMPARISON. THE RESULTS GENERALLY INDICATED THAT THE STAR CHILDREN HAD HIGHER MEAN SCORES ON ALL NINE TESTS THAN THE OTHER GROUPS. HOWEVER, IN COMPARISON WITH THE NATIONAL NORMS OF THE METROPOLITAN READINESS TESTS, THE STAR CHILDREN WERE FUNCTIONING ONLY AT AN "AVERAGE READINESS STATUS," DESPITE THE SPECIAL INTERVENTION EFFORTS. THE POSSIBLE DIFFERENCES BETWEEN STAR PUPILS WHO RECEIVED DIRECT TUTORING FROM THE NONPROFESSIONAL AIDES AND THOSE WHO RECEIVED HELP FROM THE PARENT TRAINED BY THE AIDE WERE NOT SIGNIFICANT. NO ATTEMPT WAS MADE TO CORRELATE PARENT INVOLVEMENT AND PUPIL ACHIEVEMENT. (EF)

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AN EVALUATION OF STAR *

or

The Effects of Training and Deputizing Indigenous Adults to Administer a Home-Based Tutoring Program to First Graders in an Urban Depressed Area.

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* Supplementary Teaching Assistance in Reading

AN EVALUATION OF STAR*

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Introduction

Compensatory education for the underprivileged differs from conventional education for the privileged primarily in degree rather than in kind. Instructional input is not substantively or methodologically innovative; instead, it consists of more of the same goods and services found in ordinary curriculums. The accent is on quantity--earlier school admission, a longer school year, smaller classes, more remedial services, and a larger stock of teaching aids--while relatively little effort is made to change the nature and quality of the school experience within existing limits of time, space, staff, and budget. Nobody as yet knows whether an added dosage of traditional education will help slum pupils catch up with their advantaged peers, but that is clearly where the major investment is being made. The knottiest problem in mounting such a compensatory program for the underprivileged is therefore a logistic one of finding enough extra funds to pay for it, locating and recruiting enough trained manpower to fill the extra positions, and devising

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an appropriate "delivery system" to enable the treatment to reach the multitudes who need it.

With the demand for additional professional staff in slum achools growing more rapidly than the supply, it was perhaps inevitable that school administrators should turn to untrained adults and adolescents for help to get the educational job done. Indeed, reports of mushrooming programs involving non-professionals are already being circulated out of many parts of the country. These programs vary from one community to the next, as do the backgrounds, ages, and roles of the non-professionals serving in them. In Detroit (1967) 40 female aides with a median age of 35.5 years, a median length of schooling of 12 years, and a mean language arts score at about the eighth grade level were recruited from the target communities for training to assist in their neighborhood schools. The activities they engaged in most often included instructional services for brief periods with entire classes, tutorial work with individuals, housekeeping responsibilities in the classrooms, monitorial services, and clerical help. The program was evaluated on the basis of professional teachers rating the aides, and the results proved highly encouraging. At Garland Junior College (1966), 50 undergraduate girls aged 16-23 volunteered for an intensive summer training program to assist in day care centers in the Boston area. These students worked mainly with underprivileged children aged 3-5, and the project has produced a documentary film exploring the role of the aide in an early

childhood teaching team composed of a head teacher, an assistant, and the aide. The seminar concentrated heavily on subject matter familiar in more formal teacher training programs, including the study of child growth and development, the special needs of disadvantaged children, techniques for good teacher-child relationships, building closer school-home ties, curriculum design for preschool children, and keeping records.

In Southern California, the OEO Training and Development Center, a tri-College training facility has since 1965 prepared approximately 3,000 para-professional aides to work in school and community projects in local poverty area schools. Many of these aides are paired with professionals in Head-Start Centers. A preliminary evaluation of the program (1967) focuses on changes in role perception on the part of the aides and of professional trainees who studied along with them. The results show that non-professionals tend to define their tasks less globally and more in specific terms as they gain more training and experience. No mention is made of the social origins and abilities of the non-professional group. In Appalachia (1967), some 150 economically deprived teenagers were recruited from nine local counties and assigned as auxiliary personnel to work with young children in kindergartens, Head-Start Centers, and primary grades after receiving prior training in a five-week workshop held on the campus of Ohio University. No objective evaluation has yet been made, but the morale in the group is reported-

ly high and there is good reason to believe that the program will be beneficial both to the young children and to the teenagers. A series of investigations conducted by the University of California Extension, Riverside, and the New Careers Development Project, Institute for the Study of Crime & Delinquency, Sacramento (1965) showed that primary and upper elementary school children made some gains in language arts after receiving help during the summer from various kinds of non-professionals, including drop-outs, high school students, untrained parents, and college students. No control group data are reported.

These reports typify a growing sentiment among educators to encourage continued experimentation with the use of non-professional assistance in depressed area schools. The quality of the laymen's contributions has not yet been assessed, but it is significant to know that there is little hesitation to involve them in instructional tasks. The schools that have enlisted their help are evidently convinced that the methods of teaching young children are not so esoteric as to require full-scale professional training; adults and even adolescents with relatively little formal schooling can be taught some of the skills that may enable them to contribute something of value to the slum child's educational growth and perhaps even to their own. Involvement of aides is therefore not just a desperation move to fill teaching positions with any available warm bodies but rather part of a plan to find a constructive role for the untrained in the educational enterprise. In this sense, education is following

the lead of other professions, such as medicine and social work, that have long been making use of non-professionals.

Background of The Study

For the past four years, Mobilization for Youth, a community-based delinquency control project in New York City, has been in the process of developing ways to involve the home in an after-school reading program for underprivileged children. The name given this project is Supplementary Teaching Assistance in Reading (STAR). Its basic intention is to upgrade the children's literacy levels by arranging for parents to learn some practical skills in tutoring their own offspring. It was hypothesized that if parents were given clearly structured guidelines for supplementing the school's role in the educative process, the resulting impact on pupil achievement would be significant. Parents have many more hours of direct contact with their children than do trained, institution-based reading teachers, and could perhaps spend some of this time constructively from an educational standpoint if they were taught how to do it.

Through trial and error over a two-year period, the program underwent several stages of development. At first, parents were invited to two Mobilization for Youth reading clinics for special training from the clinic staffs. This plan failed because the parents were bound to their homes with so many day-to-day problems that it was impossible to sustain their attendance at the training sessions on a regularly scheduled basis. In an effort to overcome this hurdle,

Mobilization for Youth recruited a group of low-income adults living in the target area--some of whom were bilingual and could therefore communicate with the large non-English speaking local population--and prepared them to go into the homes and instruct parents in basic techniques of helping their children learn to read. The aides succeeded in gaining access to the homes, thus resolving the problem of establishing and maintaining contact with parents. The major remaining task was that of designing appropriate lesson plans for the aides to master and then transmit to the parents as "how-to-do-it" guides for tutoring their children.

During the 1965-66 school year, Mobilization for Youth pilot tested a preliminary version of the STAR program under controlled conditions. Once a week, for a five month period, local women representing the ethnic and socio-economic makeup of the target population visited the homes of first, third, and sixth graders, and also of junior high school pupils to work with the parents. In preparation for these visits, the reading aides attended a weekly training session under the direction of the reading clinic staff. Two additional groups were matched with the STAR pupils, one receiving direct remediation at the Mobilization reading clinics in three 45 minute sessions a week, and the other serving as a control.

The results of the pilot study were inconclusive, but they suggest that STAR-type intervention may be an effective compensatory mechanism. Although the older elementary and junior high school

pupils did not show measurable change as a result of STAR, the first graders gained significantly on some measures of reading readiness. Pre to post increment scores on the Numbers Readiness and Figure Copying tests of the Metropolitan Readiness Battery (for which there is some empirical evidence that they are as valid as the total battery in predicting reading achievement) showed significant differences favoring the STAR pupils over the comparison groups. However, the results on the other criterion measures were not as encouraging. Goodenough Draw-A-Man Tests were administered pre and post and no significant gain differences were found, although the direction of differences favored the STAR group. No such directional finding was obtained from the Metropolitan Reading Achievement Test administered only at the end of the experimental period.

The pilot study led to a decision to restrict further experimentation to first grade classes. The staff feeling was that STAR-type intervention may be too late by the time the child reaches beyond his first year or two at school, although it was acknowleged that the programs failure in the upper grades may have resulted from a premature evaluation of an instructional design that needed much more refinement and structure. The remainder of this report deals with an evaluation of the program in the 1966-67 school year during which the major changes included enlarging the STAR pupil population, thus increasing the number of aides and professional trainers in the program, revising the lesson plans used by the aides in their visits to

the homes, and focusing the experiment exclusively on a first grade population.

Methodology

Population Sampling

Experimental and control groups were recruited from eight schools in a poverty-ridden area where the predominant minority group is of lower-class Puerto Rican origin. Teachers of the first grades were invited to list the pupils they thought would be deficient in reading by the end of the year, and the resulting pool of nominees, numbering approximately 650, constituted the target population. With the help of a table of random numbers the population was distributed into three groups, 490 being assigned to STAR, 90 to the reading clinic for direct remediation from reading specialists for three 45 minute periods per week, and 70 serving as controls.

During the previous year of field testing the STAR program, it was found that in some homes the parent consented to receive instruction from the aide in methods of tutoring the child, whereas in others the aide worked directly with the child while the parents observed the lesson and followed up with further tutoring after the visit. It was therefore decided to divide the 1966-67 STAR group into two sub-populations, each receiving one of the two types of home instruction.

When the list of STAR pupils was drawn up, the parents were contacted and invited to become part of the program with the understanding that they would allow the reading aide to visit them once a week for

one hour and that they would accept a follow-up assignment to tutor their children in preparation for the next visit. Out of 490 parents contacted, 383 agreed to join the program. Those who refused to join, and those who dropped out after 13 visits or less, became a second control group to check whether the attrition resulted in a biased STAR sample.

An estimated 80 percent of the pupils in the project were Spanish-speaking, many of them coming from homes where the parents had no knowledge of English. Among the Spanish-speaking parents, a few were illiterate in any language. Aside from their language handicap, they reflected many of the familiar patterns of lower-class life. Some lived in low-income housing projects but most families were crowded into dingy over-age tenements where they functioned in an environment of poverty, squalor, stench, and apparent despair. The STAR pupils usually had many siblings who vied for parental attention, and in many instances their fathers were no longer living with them. Neighborhood crime rates were high, with youthful offences ranging from narcotics addiction to theft and violence. Educational failure was also widespread; yet, the parents' responsiveness to participating in the STAR program tended to belie the frequent assumption that education is derogated in these homes. Many mothers made sacrifices to participate in the program even though it meant taking time out of a staggering schedule of caring for the everyday needs of a large family in hopelessly inadequate quarters.

Recruitment of Aides

Applications to join the staff of reading aides were solicited by local newspaper ads and through personal contacts established between Mobilization for Youth and community groups. No formal prior schooling was required, but the candidate had to represent the social class and ethnicity of the target group and have enough literacy skills to be capable of comprehending the lesson plans. The screening procedure was a simple one. Applicants were asked to study a lesson plan, then demonstrate how they would utilize it in training parents to tutor their children. A reading clinician role-played the part of a parent and judged the candidates on their ability to understand the purpose and content of the lesson plan and to relay the instructions to parentsin a clear, patient manner. A total of 28 aides (3 men and 25 women) were recruited into the program and were paid $2.00 per hour for their services.

All of the aides were adults ranging in age from 21 to 40. Only 5 had completed high school but they all showed a strong desire to help improve children's school achievement. Economically they all hovered around the poverty line, half of them on public assistance at the outset of the program. Enough of them were conversant enough in Spanish to accommodate the non-English speaking parents assigned to them.

Program Schedule

Negotiations with local school authorities for clearances to mount

the program--plus the time-consuming procedures of soliciting nominations of pupils for the experiment, classifying them, establishing contact with the STAR parents, and recruiting reading aides--delayed the first home visit until February, 1967. The clinic group got started somewhat earlier, in November 1966. From the starting date until early in June when the program terminated, the reading aides made 21 weekly one-hour visits to the homes. Each of the aides had a case load of approximately 15 parents, and each of the reading clinicians supervised between 5 and 7 aides in addition to providing direct remedial treatment to the clinic group.

Every Friday the clinic closed its doors to pupils receiving direct service, and the staff spent much of the day training the aides to administer the following week's lesson, reviewing the problems that arose in recent visits, and parceling out to the aides the various instructional materials that were to go into the home. Monday through Thursday were set aside for home visiting, the hours arranged between parents and aides. Those aides who worked directly with parents arranged their visits while the children were away at school, and those who tutored the children arranged to come at appropriate after-school hours when the parents could set aside time to observe the lesson. At the end of the visiting hour each aide gave the parent a weekly tutoring assignment along with accompanying instructional materials, and the child's progress in covering the assigned content was reviewed by parent and aide at the beginning of the next visit to determine whether new material should be

introduced or old material reviewed. The reading clinicians accompanied the aides on some occasions in order to get a first-hand view of the program in action and make programmatic adaptations wherever necessary.

Program Content

The 21 lesson plans prepared for the 1966-67 STAR experiment were designed to be a series of highly structured "how-to-do-it" exercises in reading readiness which indigenious non-professionals could teach parents of underprivileged first graders to follow in tutoring their children at home. Each lesson plan was, in effect, a teacher's manual for non-professionals written in English and also translated into Spanish for non-English speaking parents. No effort was made to relate the content and methodology to that of the child's classroom, nor did the reading clinicians and aides attempt to establish a relationship with the child's school teacher. The child might have gained extra benefits from such a collaborative effort, especially if the relationship between the school and STAR programs were mutually reinforcing, but the task of negotiating working arrangements with the teachers would have postponed the start of the program for too long to give it a fair trial.

Conceptually, the content was organized around the following three kinds of reading readiness activity:

(1) Practice in code breaking. This was a formal introduction to alphabet, starting with a recitation of the letter names, visual

recognition of the letters, learning letter sounds, graphemes, and phonemes. These activities led to word-attack exercises and building a sight vocabulary. Various sensory modalities were reached during the lessons in order to reinforce learning and sustain pupil interest. The guidelines were arranged so clearly and sequentially that there was no need for improvisation at any point.

(2) Formal language experience. Activities centered around simple trade books brought into the home to encourage interest in the printed word. The parent read the story to the child, asked prepared questions about the content, discussed the illustrations, helped build a sight vocabulary from selected words in the story, and then moved on to other story books and related library activities. It was hoped that the children would derive pleasure from listening to the stories and would develop a beginning sense of pride in organizing their own little libraries with the books they were allowed to keep. In homes where the parents could only read Spanish, translations of the books were provided for them. Some of the non-English speaking parents could not read Spanish either; they spent the time telling the story to the children and discussing the illustrations.

(3) Visual-perceptual exercises. This was restricted to the familiar pencil-and-paper activities developed by Marianne Frostig and her associates. They include tests of perceptual constancy, figure-ground discrimination, discernment of position in space,

and interpretations of spatial relationships. There was no complete agreement among the clinic staff as to the value of this kind of exercise. Some felt that substantively they accelerated reading readiness. Others thought that the real value was in its pencil-and-paper test format which gave pupils some much needed experience in learning ground rules for taking school-type examinations. Others, still, were convinced that the main value of these exercises lay in the fact that the children found them enjoyable to do, thus helping to create a positive feeling about schoolwork.

Each of the lesson plans incorporated exercises that could be categorized in the aforementioned three classes of activity. The instructions were specific and easy to understand, and the difficulty levels progressed from one lesson to the next. Each lesson plan was accompanied by appropriate instructional aids, some designed by the project staff, others obtained from commercial sources. In addition, a review sheet was attached to every lesson plan covering the material assigned at the previous home visit. All of the workshop activities, including the design and preparation of lessons, training the aides, and handling the many administrative details took place at the Mobilization for Youth reading clinic which served as the center for experimentation.

Collection and Analysis of Data

Data collection and analysis had to be completed in three weeks during the month of June 1967, thus making it impossible for the small

professional staff to post-test the total sample. It was therefore decided to accommodate only those in the STAR and control groups attending schools in the immediate vicinity of the clinic as well as those who were coming to the clinic for remediation. In all, 162 children were listed for testing, including 36 STAR Ss, 96 receiving treatment at the reading clinic, and 30 controls. Of these, 12 STAR Ss, 77 Clinic Ss and 14 controls had taken the New York Reading Readiness Test in September 1966 as part of the city-wide testing program administered by the Board of Education. These scores were used in a post-hoc comparison of the experimental and control groups to determine their initial comparability.

At the close of the experiment in June 1967, the Clinic staff administered the Frostig Developmental Tests of Visual Perception and the Metropolitan Reading Readiness Tests to as many of the 162 children as were available for testing. By that time, 12 of the STAR Ss had dropped out before receiving full or any treatment. These subjects constitute a fourth comparison group whose homes were visited fewer than 14 times during the course of the experiment. It was found that 1 had received 10 visits before dropping out, 1 had received 3 visits, and another was visited twice before dropping out of the program. The remaining 9 were not visited at all due to parental absence at the scheduled visiting hour or the parents' disinclination to participate from the outset. Further attrition resulted from children moving out, and in one case being hospitalized,

thus further reducing the STAR Ss by 5, the clinic Ss by 6, and the controls by 7. The final numbers of children tested in June are presented in Table I.

Table I

POST-TEST SAMPLE ON WHICH THE EVALUATION WAS MADE

Sub-Groups	N
Clinic (Cl)	90
STAR Ss (S+)	19
STAR drop-outs and refusals (S-)	12
Controls (C)	23*
Total	144

All available scores on the New York Reading Readiness Tests were analyzed for initial differences between the various experimental and control groups. The means and standard deviations presented in Table II show that the differences were negligible. Only 3 scores were available for the STAR drop-outs (all of them higher than the means for the other groups), so no real description of their pre-program functioning level is available.

As noted earlier, the criterion measures were administered in June 1967. Out of this testing, nine scores were derived for analysis: Frostig Perceptual Quotient, Metropolitan Reading Readiness, Total Readiness, Word Meaning, Sentences, Information, Matching, Copying, and Numbers. According to the test manuals, the Metropolitan Readi-

* One of the 23 controls was tested on the Frostig but not on the Metropolitan Reading Readiness Test.

Table II

COMPARISON OF THE VARIOUS SUBGROUPS ON THE NEW YORK READING READINESS TEST ADMINISTERED IN SEPTEMBER 1966.

	STAR (S+) (N=9)	Clinic (Cl) (N=77)	Control (C) (N=14)	STAR Drop-outs (S-) (N=3)*
$\bar{X}$	25.44	24.54	26.28	
S.D.	12.82	8.71	13.19	

F=N.S.

ness scores correlate from .40 to .53 with Metropolitan Reading Achievement Tests given a year later. Test-retest reliability coefficients for Word Meaning, Sentences, and Information sub-tests are low, in the .50's, but others are more satisfactory, ranging from .76 to .89.

The data were analyzed using a one-way analysis of variance across the four treatment groups, In addition, orthogonal comparisons were made on all tests to determine whether STAR children score higher than other groups, Further orthogonal comparisons were run where they looked promising, using a Scheffé test to correct the required F needed for significance. In addition, individual t tests were made, comparing pairs of groups, testing first the hypothesis that STAR Ss would score higher than controls. Other t tests were run for purposes of making every promising paired comparison between the subgroups, and the level of confidence was adjusted by squaring the needed value of t with each subsequent test.

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* Sample too small for analysis

Results

Summaries of the intergroup comparisons are presented on Tables III and IV. The STAR Ss had the highest mean scores in all of the 9 tests, followed by the Clinic Ss in all but 3 tests, then by the controls who ranked second twice, third five times, and fourth twice, and finally by the STAR drop-outs who ranked second once, third once, and fourth seven times.

The one-way analysis of variance across the 4 groups reached the .025 level of significance in the Metropolitan Matching sub-test, the .10 level in the Total Reading Readiness and Word Meaning scores, and the .20 level in the Frostig, and Total Readiness scores (See Table III). Orthogonal comparisons testing the hypothesis that STAR Ss would score higher than other groups reached the .01 level of significance for the Metropolitan Matching sub-test, the .05 level for the Metropolitan Word Meaning test, and the .10 for the Frostig, Total Readiness, and Total Reading Readiness scores (See Table IV). In all, mean differences favored the STAR group over the others on every criterion measure, and at the .10 level of significance or better on five of them.

In order to determine individual sub-population differences, *t* tests were run comparing each group with another (See Table IV). For the hypothesis that STAR pupils would score higher than controls, the values of *t* necessary for significance were read directly from the *t* table. Other comparisons used the squared value of the necessary *t* for significance. The analyses show that STAR Ss scored significantly

Table III

SUMMARY OF ONE-WAY ANALYSES OF VARIANCE FOR EACH OF THE NINE CRITERION MEASURES ACROSS THE FOUR GROUPS

Criterion Measures	STAR (S+) (N=19)	Clinic (Cl) (N=90)	CONTROLS (C) (N=22)	STAR Drop-Outs (S-) (N-12)	F	p
Frostig						
$\bar{X}$	99.79	94.64	91.04	93.25	1.55	<.20
S.D.	11.34	13.23	16.93	16.76		
Met.-Total Readiness						
$\bar{X}$	77.84	70.42	70.32	67.33	1.65	<.20
S.D.	9.27	14.77	16.39	16.83		
Met.-Total Rdg. Readiness						
$\bar{X}$	52.63	48.07	47.41	43.83	2.20	<.10
S.D.	7.79	9.61	10.79	8.91		
Met.- Copying						
$\bar{X}$	8.00	7.53	7.59	6.50		
S.D.	1.86	2.21	1.97	3.01		
Met.-Numbers						
$\bar{X}$	17.21	15.80	15.50	16.42		N.S.
S.D.	3.04	4.71	3.27	5.06		
Met.-Matching						
$\bar{X}$	17.63	15.91	15.18	13.50	3.38	<.025
S.D.	1.33	3.52	3.93	5.74		
Met.-Information						
$\bar{X}$	11.32	10.32	10.82	9.92		N.S.
S.D.	2.72	3.01	2.80	3.65		
Met.-Sentences						
$\bar{X}$	9.68	9.08	8.91	8.17		N.S.
S.D.	2.59	2.26	2.62	2.53		
Met.-Word Meaning						
$\bar{X}$	14.00	12.39	12.23	11.08	2.24	<.10
S.D.	3.54	3.28	2.34	2.97		

Table IV

ORTHOGONAL AND PAIRED COMPARISONS AMONG THE SUB-GROUPS FOR EACH OF THE NINE CRITERION MEASURES

Criterion Measures	Orthogonal Comparisons	F	p	Paired Comparisons	t	p
Frostig	S+ > Cl,C,S-	3.57	< .10	S+ > C	2.00	< .05
				S+ < S-		N.S.
Met.-Total Readiness	S+ > Cl,C,S-	3.04	< .10	S+ > C	1.84	< .05
				S+ > Cl	2.81	< .05
	S- < Cl,S+,C	1.47	N.S.	S+ > S-	1.98	N.S.
Met.-Total Rdg. Readiness	S+ > Cl,C,S-	3.80	< .10	S+ > C	1.79	< .05
	S- < S+,Cl,C	3.48	N.S.	S+ > Cl	2.21	< .10
				S+ > S-	2.81	N.S.
Met.-Copying	S+ > Cl,C,S-	1.85	N.S.	S+ > C		N.S.
				S+ > S-	2.58	< .10
Met.-Numbers	S+ > Cl,C,S-		N.S.	S+ > C	1.74	< .05
				S+ > Cl	1.63	N.S.
Met.-Matching	S+ > Cl,C,S-	8.49	< .01	S+ > C	2.75	< .01
	S- < S+,Cl,C	5.88	N.S.	S+ > Cl	3.58	< .05
				S+ > S-	2.45	N.S.
Met.-Information	S+ > Cl,C,S-		N.S.	No Differences		
Met.-Sentences	S+ > Cl,C,S-		N.S.	No Differences		
Met.-Word Meaning	S+ > Cl,C,S-	6.36	< .05	S+ > C	3.34	N.S.
				S+ > S-	6.31	N.S.

higher than controls at the .01 level on the Metropolitan Matching, and at the .05 on the Frostig, Total Readiness, Reading Readiness, and Number Tests. STAR Ss were found to score significantly higher than clinic Ss at the .05 level on the Total Readiness and Matching Sub-Tests, and at the .10 level on the Reading Readiness tests when these were the second order of comparison. Although t's were also computed comparing STAR Ss with STAR drop-outs, these comparisons were not especially connected to any original hypothesis. The required value of t was therefore so high that none were significant. Differences between clinic and control Ss were likewise never significant, although the clinic Ss scored higher on 7 out of the 9 tests.

A look at the mean scores on the various criterion measures in relation to national norms help clarify the results from another perspective. On the Frostig, the STAR Ss funtioned at about an average level in a deviation-based perceptual quotient that takes into consideration the age of the subject. The other groups fell from about one-half to three-quarters standard deviation below this norm for the test. On the Metropolitan Readiness Tests, the results were not so encouraging. The Total Readiness score for the STAR Ss fell at the 66%ile of the standardization group made up of a national sample tested in the first month of the first grade. The clinic and control Ss scored at the 48%ile, and the STAR drop-outs at the 41st. These percentiles fall into what the test manual calls "an average readiness status", a category further modified by the phrase "likely to succeed in first grade work". In other words,

even after special intervention, these pupils only accomplished enough in their first year of schooling to be regarded as good risks to succeed in first grade work.

An attempt was also made to detect possible differences between the STAR pupils who received direct tutoring from the aides and those who benefitted from the training and tutoring skills the aides gave their parents. Of the 19 STAR Ss, 7 received direct help while 12 had no contact with the aides. Because of the small N's, the differences between these sub-groups did not reach significance, but there was a definite tendency for the children receiving direct help from the aides to score higher on the more perceptually oriented tasks such as the Frostig, The Copying, and The Numbers sub-tests of the Metropolitan Reading Readiness Battery, while there was hardly any difference on those tests more directly involving verbal mastery.

Finally, an attempt was made to relate the degree of parental cooperation to their children's achievment in the STAR program. Aides were asked to rate each parent on cooperativeness and on the amount of time they spent with the aide during each visit. Ratings made in March and June produced uniformly high scores for nearly all of the parents. Since the distribution of scores was so narrow it was decided not to correlate parental involvement with pupil achievement.

Some Possible Implications

While the results of this study are by no means definitive, they reveal a consistently higher level of school readiness among first graders receiving STAR-type intervention as compared to those assigned to a remedial program and others serving as controls. The odds are overwhelmingly against the same group out of 4 comparable ones ranking highest on all of the nine criterion measures. Yet, despite the fact that the STAR pupils participated in the experiment for less than five months while the clinic children received direct remediation from trained reading specialists for nearly eight months, the former group ranked first on every test. This consistency suggests that with larger N's, significance at more acceptable levels of confidence could be expected provided, of course, that the same mean differences and variabilities were sustained. It is reasonable to hypothesize that the STAR group's performance would have been even more impressive if the experimental period had been long enough to double (at least) the number of weekly visits the aides were able to make.

Even more important is the fact that the tests showing the best results also reflect the content of the STAR program. Greatest differences are apparent in the Frostig test, the Matching, and the Word Meaning sub-tests of the Metropolitan, skills emphasized in the lesson plans, whereas much less impressive scores were yielded on the Information and Sentences sub-tests which measure skills not

emphasized in the program. These results suggest that the benefits of STAR were not yielded by the aides' visits per se, irrespective of what transpired during the visits, but by the specific content of the lessor plans. The importance of this content in the overall reading progress of underprivileged children remains yet to be evaluated. Nevertheless, the study shows that non-professionals, specifically those representing a disadvantaged population, can learn some teaching skills traditionally reserved for professional teachers and utilize them with some success in a disadvantaged community.

There is also some indication that STAR may have had a spill-over effect on the close-in-age siblings of the target first graders. The aides reported that brothers and sisters often observed or participated in the lessons, and in some instances their interest was so strong that extra instructional supplies had to be sent home for their use. The aides' own primary grade children were probably likewise exposed to the instructional materials prepared each week. Unfortunately, there was neither sufficient time nor staff to assess the peripheral impact. Such an evaluation might have shown that STAR stimulated learning activity not only among the children who came into direct and indirect contact with the program but also among the parents and aides who participated in the tutoring.

Encouraging as the study's outcomes are, its limitations should

not be overlooked. It is true that the short duration of the experiment and the small size of the experimental sample reduced the likelihood of dramatic results; still, there is no basis as yet for making extravagant claims for STAR. Only one of the nine analyses of variance produced F ratios significant beyond the .05 level. Moreover, the STAR sample may have been biased as a result of attrition. The mean rank of the STAR drop-outs on the 9 tests was 3.66, as against 3.0 for the controls, which suggests that the children removed from the sample did not constitute a random group. None of the mean differences between the drop-out and control groups were significant, but judging from the scores on criterion measures it is quite possible that withdrawal from STAR tended to narrow the ability range within this group.

Since only three of the drop-outs were given New York State Reading Readiness tests in September 1966, there is no way of knowing how they compared with the others at the outset of the experiment. These three, however, scored higher than the means for the other groups, and at post-test time, two of them were well below the mean even for the drop-out Ss. Evidently, factors other than intelligence or perceptual ability were operating. The only other relevant analysis concerns the variability of the drop-outs in their performance on the criterion measures. In most tests their scores have larger variances than do other groups, and in three of these tests the differences are significant. From this bit of evidence

it might be hypothesized that they are a group of extreme performers, some relatively able and the others relatively dull, with the latter type predominating.

If repeated assessments of STAR confirm the positive results of this study, the program can be a practical asset to remediation services in depressed areas. Ghetto schools normally face a difficult task in developing special techniques and materials to combat retardation. Methods that are successful in more favored neighborhood schools are not necessarily appropriate with socially disadvantaged children. But even if educators could find ways of providing equally effective remedial help to pupils from all backgrounds, the operational styles of these programs would vary greatly from one type of school to the next. Generally speaking, remedial specialists are trained to work with individuals and small groups and therefore reach out directly to relatively few children. This poses no problem in communities where severe learning disability is rare. In disadvantaged neighborhoods, however, failure is so widespread that conventional types of special services can accommodate only a small proportion of those who need extra help. The cost of augmenting existing staffs to handle the required case load could be prohibitive, even if the teacher training institutions graduated enough specialists to fill the added positions. It is therefore obvious that some new source of teacher supply is necessary, and one available reservoir may be the masses of untrained adolescents and adults living in de-

pressed areas who have enough aptitude to learn some simple teaching skills and make up in sheer persistence, dedication, and frequency of contact for what they lack in professional sophistication.

The cost of STAR is relatively low by the usual school budget standards. A single well-trained, well-paid teacher can multiply his efforts with the help of STAR aides by providing indirect services to many times the number of pupils he ordinarily reaches, at a supplementary cost determined by hourly rates paid unskilled workers. This necessitates a role change for the professional. Instead of spending his time teaching children, he devotes it to train-in the aides and supervising their work in the field. If the expense were computed in terms of tutorial time provided for the children, the cost per hour would be relatively negligible.

Perhaps the major outcome of this study is that it finds promise in a treatment model that is flexible and adaptable enough to enable educators to attack hitherto inaccessible roots of problems plaguing ghetto classrooms. It is no secret that schools are trying to re-shape the lives of disadvantaged children by instilling in them the various coping mechanisms with which to face up to the demands of an increasingly complex industrialized society. This involves far more than just teaching the child some communication skills in the elementary grades and encouraging him to stay on the educational conveyor belt at least trough adolescence. It requires, instead, a powerful influence on the way he cultivates his cognitive

aptitudes, his motivational structure, his value system, his self-image, and his Weltanschauung. This kind of intensive nurture cannot be accomplished without involving the home at some critical stages of childhood growth. The entire constellation of parent-child relationships from the moment of birth until the onset of schooling seems to have a persistent effect on the child's personal history. In their latest follow-up study of infants reared under different conditions in foundling homes, Skeels and Skodak (1966) revealed that poor mothering practices can inhibit healthy mental development even beyond the childhood stages despite the corrective influences of a normal environment beginning in post-infancy. To the extent, then, that early deprivation in the slum family environment is accountable for later failure at school, the damage is already done even by the time the child is absorbed into a Head-Start type program.

With the help of non-professionals, the educator can gain access to the home long before the child is of school age and breathe new meaning into early intervention. His aim would be to head off the deleterious effects of minimal succorant care in infancy, provide an environment of optimum cognitive stimulation at the earliest stages in life, and build the young child's experiential background in preparation for learning.

The essential task involved in designing such a modified STAR program is to analyze the medical and psychological literature

on the specific early deprivations that seem to retard normal growth and extrapolate some guidelines for designing clear-cut, sequential parent-infant activities. Such a curriculum would also include making practical use of information regarding the scope of experiences afforded children in homes where the environment for school readiness is challenging and supportive. The aides could be trained to utilize some of this information in helping mothers enrich their child rearing practices and thus prepare them for school learning. This might be a first step toward testing the hypothesis that present-day early intervention programs are doomed to failure because (1) they do not intervene early enough and (2) they ignore the home where the most influential behavior patterning seems to take place.

One major aspect of the STAR program that remains yet to be assessed is its contribution to the social structure of the inner city. Usually, programs aimed at rehabilitating ghetto life are administered by people who are not themselves identified with the target community. The teacher in the slum school lives outside the ghetto area, as does the anti-poverty social worker or the physician in the local free dispensary. Most of those who were born in the ghetto and have "made it" socially, economically, or professionally, have long since moved out to more advantaged surroundings, thus leaving behind a critical shortage of talent and buying power. Under these circumstances a self-help movement is virtually impossible.

The familiar gambit for filling the ghetto's skill and money void is to infuse it with huge job training programs; but the training is generally restricted to blue collar skills which guarantee little status mobility even if they succeed in surviving the inroads of automation. Preparing indigenous adults to assist professionalls in attacking the problems of the ghetto may contribute something of permanent value to community life. The talents cultivated among the STAR aides will remain in the Ghetto as an internal force for reducing its dependency relationship with the outside world. Future assessment may show that they are more dedicated to their tasks than are the better-trained "outsiders"; or even if they are not more dedicated, perhaps the target groups are more receptive to their ministrations.

Although no effort was made to determine the impact of STAR on the aides and parents themselves, informal observations suggest that it ought to be explored in depth. The feeling of pride and self-fullfillment expressed by the aides when they sensed that their efforts were producing encouraging results made a strong impression on their professional trainers and probably on the parents too. They knew they were doing an important job, one that may some day carry with it special prestige in the community. Their work was restricted to helping build reading skills, but it could also have been directed at reducing the social distance between the disadvantaged home and the school. With proper training, the aides might have succeeded in

galvanizing parents to participate more actively in school activities that bear directly on their children's progress.

The informal reports of the STAR aides show that the parents sought their help not only in matters pertaining to the children's education but for any number of social, economic, medical, and residential problems that threatened the family. Unfortunately, they were not trained to handle the multitude of oppressive confidences shared with them in their home visits; all they could offer was a specific skill that seems to have produced encouraging but limited results. If the aides were equipped to render some "social brokerage" services in cooperation with local community agencies, their work could perhaps have forged a meaningful new link between social and educational intervention.

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