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ABSTRACT

This study compared the performance of kindergarten children who had participated in a full-year Head Start program (FYHS) with that of children who had attended summer Head Start (SHS). FYHS subjects at each of two elementary schools were selected at random from eligible applicants. SHS comparison groups were made up primarily of children from the same initial lists of subjects. On a group of measures administered about 8 months after completion of the Head Start programs, no significant differences were shown between FHYS and SHS children, or between the two elementary school groups. SHS children, however, earned significantly higher IQ scores at the end of kindergarten than they had early in Head Start, and FYHS children showed a significant progressive increase in IQ over a 2-year period covering Head Start and kindergarten. This continuous increase in IQ is noteworthy, since previous studies have found a leveling-off effect following an initial gain in Head Start. It is recommended that follow-up studies concentrate on the long-range effects of FYHS programs with defined curricula focused on cognitive development. (Author/NH)

University of Hawaii
Head Start Evaluation and Research Center
Dorothy C. Adkins, Director

Final Report

# Hawaii Head Start Evaluation Follow-Up--1968-69

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Education Research and Development Center
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FOREWORD

This study was conducted with the cooperation of the following personnel at the two sample schools.

Maili Elementary School:

Mr. Shigeo Kimura, principal.
Mrs. Ramona Souza, teacher of full-year Head Start, 1967-68.
Mrs. Sally Dockham, teacher of summer Head Start, 1968.
Mrs. Sally Dockham, teacher of kindergarten, 1968-69.
Miss Carol Hiraoka, teacher of kindergarten, 1968-69.
Mrs. Eleanor Kama, teacher of kindergarten, 1968-69.
Mrs. Marjorie Overton, teacher of kindergarten, 1968-69.
Mrs. Eva Yonemori, teacher of kindergarten, 1968-69.
Miss Marion Ueda, teacher of kindergarten, 1968-69.

Makaha Elementary School:

Mr. Sam Oshio, acting principal.
Mrs. Karie Bryant, teacher of full-year Head Start, 1967-68.
Miss Millicent Fo, teacher of kindergarten.
Miss Ellen Horiuchi, teacher of kindergarten.
Mrs. Ramona Souza, teacher of kindergarten.
Miss Tony De Terlizzi, teacher of kindergarten.
Miss Vivian Yonehara, teacher of kindergarten.

Testing and collection of data were done by the following personnel of the Head Start Research Center staff: Betty Crooker, Carole Hodges, Virginia Lerner, Annette Okimoto, Ann Pavelko, Katherine Payton, Betty Parker, Betty Elrod, and Annie Worth.

A series of studies summarized in a review of Head Start research (Grotberg, 1969) indicate that gains made in Head Start on cognitive measures tend to maintain themselves but that comparable gains are usually made by non-Head Start children in elementary school. Follow-up studies of Head Start after one or two years of traditional school experience, therefore, have generally failed to find significant differences between Head Start and non-Head Start children. The non-Head Start comparison groups have primarily been subjects matched on a variety of indices such as age, sex, race, and socioeconomic status, although few studies have taken all these variables into account. Difficulties in assuring comparability of subjects when post hoc matching procedures are used, however, are considerable. Since in two communities on Oahu, Hawaii, children who attended full-year Head Start (FYHS) were randomly selected from a list of eligible applicants whose parents had applied for admission to the neighborhood program, it seemed worthwhile to compare the performance in kindergarten of the children who had attended FYHS with those who had not. Many more summer than full-year programs had been offered in both areas. Therefore, those children not selected for a full-year program participated in summer Head Start (SHS), as did all but three of the FYHS children. The purpose of this study, then, was to compare the kindergarten performance of children who attended full-year in addition to summer Head Start with those who attended a summer program only.

## PROCEDURE

All the children in the study were drawn from two Head Start Centers and attended kindergarten at two elementary schools. Descriptions of the Head Start programs and of the schools follow.

### Full-Year Head Start Programs

The two Head Start classes attended by the FYHS children were included in the University of Hawaii 1967-68 national evaluation sample. Both classes were under the jurisdiction of the Hawaii Department of Education and were affiliated with a particular elementary school. Center # 1 was located on the grounds of the elementary school with which it was affiliated; the second Center was housed in a church in the neighborhood of the other elementary school. Supervision of the programs was primarily the responsibility of the school principals. Since data collected for the 1967-68 national evaluation included classroom observations, brief descriptions of the two Head Start programs are provided. The classes are compared with each other as well as with the combined average results for the seven classes included in the Hawaii national evaluation study sample.

Classroom observations were carried out five times during 1967-68, using an experimental procedure for describing classroom curricula (Observation of Substantive Curricular Input). Each observation period lasted two hours, during which a record of the classroom activities was made for consecutive three-minute segments. The activities that were observed can be classified into four categories: 1) perceptual-motor, 2) cognitive, 3) creative, and 4) social and verbal communication.

Activities that emphasized primarily perceptual-motor skills were observed 475 times on the average, 467 times in Center # 1, and 548 times in Center # 2. The major differences between the two Centers in this general area of perceptual and sensory tasks were in the relatively greater emphasis on outdoor activities and on the use of puzzles and other games involving visual discrimination in Center # 2. Auditory discrimination tasks were observed more frequently in Center # 1. Cognitive activities, specifically those focused on language development, occurred more frequently in Center # 2. Language was coded 89 times in Center # 2 and 50 times in Center # 1; the sample average was 71. Within the creative area, dramatic play occurred much more frequently in Center # 2 (118 times compared with 19), and art activities much more often in Center # 1 (103 times compared with 39). The figures for the sample average were 62 and 92, respectively. All types of communication were observed with greater frequency in Center # 2. The numbers of times general discussions, social communications, or presentations of rules were recorded in Center # 2 were 269, 279, and 56, respectively. The comparable figures for Center # 1 were 137, 191, and 14. In all cases, the figures for Center # 2 were higher than the sample average and those for Center # 1 were lower.

Activities that did not fit into any prescribed category were also noted. Included in this category were such diverse behaviors as fighting, wandering, and apparently not doing anything. These types of behaviors were observed 49 times in Center # 1, 126 times in Center # 2, and 92 times on the average. The children in Center # 2 were also more frequently observed alone (362 times) than were those in Center # 1 (234 times); the sample average was 271. Many of these individual child observations describe aimless wandering.

In summary, then, more activities were observed in Center # 2 than in Center # 1 in perceptual-motor, cognitive, and communication areas. Of the creative activities, dramatic play was more frequent in Center # 1, but general arts and crafts activities were seen much more often in Center # 2. There were also more children observed alone and without direction in Center # 2 than in Center # 1.

Another experimental procedure (Social Interaction Observation) was used in the 1967-68 national Head Start evaluation to describe the amounts and types of social interactions that occur between children and between children and adults. These observations were carried out near the beginning and end of the school year. Analysis of these data reveals that for both sets of observations, children in Center # 2 had a higher number of interactions with each other and with adults than did those in Center # 1. The pre- and post-observation figures for Center # 2 for the mean number of interactions per child were 69.8 and 107.4; comparable pre-post figures for Center # 1 were 55.3 and 73.8. In Center # 2, approximately 75% of child initiations, i.e., attempts to make verbal or nonverbal contact with another child or adult, were responded to both at the beginning and at the end of the year. In Center # 1, 51% of initiations to peers were responded to initially; 63% received a response during the post-observations. Approximately 65% of the attempts of the Center # 1 children to make contact with an adult received a response during both observation periods. In general, there was more socialization among children and between children and adults in Center # 2 than in Center # 1.

No direct teacher observations were carried out as part of the 1967-68 national Head Start evaluation. The head teacher at Center # 1 was a certified elementary school teacher experienced with both preschool and elementary school youngsters. She was, however, ill during the early

months of the program and was completely absent from the class during a period of approximately five weeks, during which some of the classroom observations were conducted. The head teacher in Center # 2 was a recent college graduate without previous teaching experience.

Summer Head Start programs involving FYHS children. The children from Center # 1 who attended an eight-week summer program in addition to the full-year program were placed in one class that was taught by their FYHS teacher. This same teacher taught one of the kindergarten classes the following year. No systematic observation of the summer program was made, but the general impression of testers was that there was a much freer atmosphere than had prevailed during the year. This was confirmed by the teacher who felt that it was not so necessary to restrict the children, since there were no regular classes in session that might be disrupted by excessive noise coming from her classroom.

All the children from Center # 2 who attended FYHS also attended a summer program. The summer classes were held on the grounds of the elementary school rather than in the neighborhood church. The FYHS children were placed in one class that was taught by a very experienced elementary school teacher who taught kindergarten during the year at the same school.

Summer Head Start Programs

In Center # 1 all the children in the SHS-only group were in the same Head Start class. One child included in the Center # 2 SHS-only group was also in this class. The head teacher was exceptionally well qualified, with extensive training and experience in preschool education. She had served at various times as a consultant and seminar leader in training programs for Head Start teachers. The SHS-only children from Center # 2 were distributed across four Head Start classes at the same

location, with the exception of the one child noted above, who moved and entered kindergarten in the school affiliated with Center # 2 and was therefore included in this group. The summer Head Start teachers were all certified elementary school teachers, one of whom was the coordinator of the kindergarten program at that school. The summer programs were eight weeks long, with the usual amount of time devoted to health and medical care of the children and to general preschool activities. Observations of these classes were not carried out, but they were presumed to be fairly typical of the type of summer program conducted in Hawaii.

Description of the Elementary Schools

The elementary schools at which the Head Start children subsequently attended kindergarten are referred to as School # 1 and School # 2, to associate them with the corresponding Head Start Centers. That is, FYHS and SHS children from Center # 1 attended School # 1 and those from Center # 2 attended School # 2 during 1968-69.

The two elementary schools are located in the same coastal region of Oahu, a primarily rural area that has been designated as one of the two model cities target areas in Hawaii. Both schools serve kindergarten through the sixth grade in addition to Head Start. School # 2 is slightly larger, having a total of 37 classes including six kindergartens and approximately 1100 pupils, compared with 34 classes with five kindergartens and approximately 900 pupils at School # 1. The schools were built at about the same time, but School # 2 has somewhat better facilities and more varied programs. School # 1 does not have a cafeteria, requiring children to eat in their rooms, and does not have a full-time nurse, music teacher, or remedial reading specialist. School # 2 has

these personnel and in addition provides special classes for children with intellectual or behavior problems.

In both elementary schools, initial assignment to kindergarten classes was strictly on the basis of age. In January, the children attending School # 2 were reassigned to classes on the basis of reading readiness. The distribution of children at each school in the various kindergarten classes is presented in Table 1. The major effect of regrouping the children at School # 2 was to place three FYHS children into the accelerated class (# 5). In both schools the children from FYHS and SHS groups were fairly widely dispersed across kindergarten classes, and thus differences among groups are not likely to be due to particular kindergarten teacher or program variables. Head Start children represented a relatively small proportion of the children in a given class and in some classes were quite unique.

Sample and Experimental Design

School # 1. From the original pool of Head Start applicants from this district in the fall of 1967, 16 children who were randomly selected to attend full-year Head Start comprised the Center # 1 FYHS group. Of these 16 children, 13 attended a summer Head Start program. The group consisted of 11 boys and five girls.

Eleven children -- seven boys and four girls -- comprised the Center # 1 SHS group. Due to heavy attrition during 1967 among children not chosen to attend FYHS, it was unfortunately necessary to include in this group four children who were not in the original pool of subjects but who attended the same summer Head Start program as did the remaining subjects.

School # 2. Seventeen children -- seven boys and 10 girls -- made up the FYHS group from School # 2. All of these children were in the ini-

TABLE 1

Distribution of Children According to Amount
of Head Start Experience and Assignment to Kindergarten Class

| | School # 1 | | School # 2 | | | |
|---|---|---|---|---|---|---|
| | September - May | | September - January | | February - May | |
| Class | FYHS | SHS | FYHS | SHS | FYHS | SHS |
| 1 | 2 | 5 | 3 | 3 | 3 | 3 |
| 2 | 1 | 2 | 2 | 3 | 1 | 3 |
| 3 | 7 | 2 | 3 | 0 | 3 | 0 |
| 4 | 5 | 2 | 5 | 3 | 4 | 3 |
| 5 | 1 | 0 | 1 | 3 | 4 | 3 |
| 6 | - | - | 3 | 1 | 2 | 1 |
| Totals | 16 | 11 | 17 | 13 | 17 | 13 |

tial pool of subjects in the fall of 1967 and all attended the same Head Start class. The SHS comparison group was in the initial pool of subjects, with the exception of one boy. This boy had attended the same program as the School # 1 SHS children and then switched to School # 2 for kindergarten. Seven boys and six girls made up this group.

A schematic presentation of the design of the study is given in Table 2. Since complete data were not obtained for all subjects, most analyses involve fewer cases than comprised the total sample.

Further description of the sample is provided by comparisons between the FYHS and SHS children on various socioeconomic dimensions. These data are presented in Tables 3 to 6. The information was obtained primarily from school records and consequently is often incomplete. When percentage comparisons are made, the number of cases for whom data are missing should be noted.

There was a slightly higher percentage of intact families within the FYHS group, when percentages were based on the total number of cases in each group. When the percentage base was limited to the number of subjects for whom data were available, the percentages of intact families in FYHS and SHS groups were essentially the same (approximately 80%). The fathers of children in the FYHS group had had, on the average, somewhat more education than those of the SHS children. Higher percentages of them were high school graduates or had completed at least nine years of school. In both FYHS and SHS groups, mothers had more education than their husbands. When percentages were based on the number of cases for whom data were available, about 50 per cent of the mothers in each group had completed high school. The unemployment rate of the fathers of both groups of children was very similar, but the fathers of SHS children had somewhat higher-level jobs. The fathers of FYHS children were as likely

TABLE 2

Experimental Design

| Elementary Schools | Amount of Head Start Experience | | |
|---|---|---|---|
| | FYHS | SHS | |
| School # 1 | 16 | 11 | 27 |
| School # 2 | 17 | 13 | 30 |
| | 33 | 24 | 57 |

TABLE 3

Comparison of the Family Structure of FYHS and SHS Children

| Family Structure | Full-Year Head Start | | | | | | Summer Head Start | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School # 1 | | School # 2 | | Total | | School # 1 | | School # 2 | | Total | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Unknown | -- | -- | -- | -- | -- | -- | 3 | 27.3 | -- | -- | 3 | 12.5 |
| Mother only | 4 | 25.0 | 3 | 17.6 | 7 | 21.2 | 1 | 9.1 | 3 | 23.1 | 4 | 16.7 |
| Mother and Father | 12 | 75.0 | 14 | 82.3 | 26 | 78.8 | 7 | 63.6 | 10 | 76.9 | 17 | 70.1 |

TABLE 4

Comparison of the Educational Level of the Fathers of FYHS and SHS Children

| Educational Level | Full-Year Head Start | | | | | | Summer Head Start | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School # 1 | | School # 2 | | Total | | School # 1 | | School # 2 | | Total | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Unknown | 4 | 25.0 | 3 | 17.6 | 7 | 21.2 | 5 | 45.4 | 4 | 30.8 | 9 | 37.5 |
| 1st - 3rd grade | -- | -- | 2 | 11.8 | 2 | 6.1 | 1 | 9.1 | 0 | 0.0 | 1 | 4.2 |
| 4th - 6th grade | -- | -- | 1 | 5.9 | 1 | 3.0 | 2 | 18.2 | 0 | 0.0 | 2 | 8.3 |
| 7th - 8th grade | 2 | 12.5 | 3 | 17.6 | 5 | 15.2 | 1 | 9.1 | 3 | 23.1 | 4 | 16.7 |
| 9th - 11th grade | 5 | 31.2 | 5 | 29.4 | 10 | 30.3 | -- | -- | 5 | 38.5 | 5 | 20.8 |
| High School graduate | 5 | 31.2 | 3 | 17.6 | 8 | 24.2 | 2 | 18.2 | 1 | 7.7 | 3 | 12.5 |

TABLE 5

Comparison of the Educational Level of the Mothers of FYHS and SHS Children

| Educational Level | Full-Year Head Start | | | | | | Summer Head Start | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School #1 | | School #2 | | Total | | School #1 | | School #2 | | Total | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Unknown | 1 | 5.9 | -- | -- | 1 | 3.0 | 4 | 36.4 | 2 | 15.4 | 6 | 25.0 |
| 1st - 3rd grade | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 4th - 6th grade | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 7th - 8th grade | 2 | 11.8 | -- | -- | 2 | 6.1 | 1 | 9.1 | 1 | 7.7 | 2 | 8.3 |
| 9th - 11th grade | 8 | 47.1 | 6 | 35.3 | 14 | 42.4 | 3 | 27.3 | 3 | 23.1 | 6 | 25.0 |
| High School Grad. | 5 | 31.2 | 10 | 58.9 | 15 | 45.4 | 3 | 27.3 | 6 | 46.2 | 9 | 37.5 |
| Some College | -- | -- | 1 | 5.9 | 1 | 3.0 | -- | -- | 1 | 7.7 | 1 | 4.2 |

TABLE 6

Comparison of the Occupations of the Fathers of FYHS and SHS Children

| Occupations | Full-Year Head Start | | | | | | Summer Head Start | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School #1 | | School # 2 | | Total | | School #1 | | School # 2 | | Total | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| Unknown | 4 | 25.0 | 4 | 23.5 | 8 | 24.2 | 3 | 27.3 | 4 | 30.8 | 7 | 29.2 |
| Unemployed | 6 | 37.5 | 2 | 11.8 | 8 | 24.2 | 2 | 18.2 | 3 | 23.1 | 5 | 20.8 |
| Unskilled Worker | 3 | 18.8 | 3 | 17.6 | 6 | 18.2 | 1 | 9.1 | 1 | 7.7 | 2 | 8.3 |
| Semiskilled Worker | 2 | 12.5 | 4 | 23.5 | 6 | 18.2 | 3 | 27.3 | 3 | 23.1 | 6 | 25.0 |
| Skilled Worker | 1 | 6.2 | 2 | 11.8 | 3 | 9.1 | 1 | 9.1 | 2 | 15.4 | 3 | 12.5 |
| Clerical & Sales | -- | -- | 2 | 11.8 | 2 | 6.1 | -- | -- | -- | -- | -- | -- |
| Semiprofessional | -- | -- | -- | -- | -- | -- | 1 | 9.1 | -- | -- | 1 | 4.2 |

to be in unskilled as in semi-skilled jobs, whereas the SHS fathers were more often listed in semi-skilled occupations. Only one mother with a child who had attended FYHS was listed as employed; three mothers of SHS children were listed as employed on the school records of their children.

In general, there were no marked differences in the socioeconomic status of the FYHS and SHS groups as a whole. Most of the families were intact; most fathers had between nine and 11 years of education and were either unemployed or in an unskilled or semi-skilled job; very few of the mothers worked, although approximately half of them were high-school graduates. Comparison of these figures with data available for the kindergarten classmates of the Head Start children is of interest. Eighty-one per cent of a total of 226 kindergarten children from both schools who did not attend any Head Start program came from intact families, a figure essentially the same as that for Head Start children. A higher percentage of the fathers of these children, however, were high-school graduates (34.7%) and fewer of them were unemployed (10%). Only one father was listed as a college graduate, however, and the most frequent types of employment were in semi-skilled (32.4%) or skilled jobs (21.2%). The educational backgrounds of the mothers were comparable to those of the mothers of Head Start children, and, similarly, these mothers were infrequently employed. The kindergarten classmates of the Head Start children were not from radically different socioeconomic backgrounds; rather, they tended to have fathers with slightly more education, who were more likely to be employed.

## RESULTS AND DISCUSSION

A common battery of tests was administered by all Head Start Evaluation and Research Centers conducting a follow-up study of samples of children who had participated in the 1967-68 national Head Start evaluation. The instruments used in the follow-up studies included the Wechsler Preschool and Primary Scale of Intelligence (WPPSI); a procedure for evaluating response styles on the WPPSI (a modification of a system developed by Hertzig, Birch, Thomas, and Mendez, 1968, for use with the Stanford-Binet); the WPPSI Inventory, a rating scale of behavior during the WPPSI administration (an adaptation of the Inventory of Factors Affecting the Stanford-Binet); an experimental measure of achievement motivation, Gumpgookies, developed at the University of Hawaii (Adkins and Ballif, Spring 1969 form); a brief teacher interview; and a checklist on educational objectives and emphases completed by the kindergarten teachers. The data reported for the measure based on the work of Hertzig, et al. (1968), consists of a "work" % score, the degree of responsiveness to the demands of the WPPSI, i.e., attempts to handle the tasks presented rather than engaging in irrelevant behavior. The WPPSI Inventory is a rating by the examiner of the child's reactions to the total test situation, with lower scores reflecting more adaptive behavior. The child's task in the Gumpgookies test is to select one of the two imaginary figures in each of a series of situations which is most like himself. The test score is the number of times the child chooses the Gumpgookie whose behavior is assumed to reflect achievement motivation. In addition to these measures, the 64-item form of the Preschool Inventory (PSI) was administered to the children in the Hawaii follow-up sample,

since no achievement measure was included in the common battery. The PSI, as well as the other individual follow-up measures with the exception of the WPPSI, were used in the 1968-69 national Head Start evaluation. A summary of findings from the teacher interview and checklist is presented first, followed by the results of the individual testing.

Teacher Interview and Checklist

Five kindergarten teachers from School # 1 and six from School # 2 were interviewed. Included in the interview were questions related to the teacher's educational background and experience. All the kindergarten teachers had a Bachelor's degree in Elementary Education. In addition, two of the five School # 1 teachers and four of the six teachers from School # 2 had a fifth-year certificate and one teacher had an M.A. degree in Education. The teachers at School # 1 were considerably younger and consequently less experienced than those from School # 2. They had taught for an average of 3.2 years, with an average of 2.2 years at the kindergarten level. The teachers from School # 2 had an average of 14 years of teaching experience and nine of these years, on the average, were as kindergarten teachers.

During the interview each teacher was asked what she thought was the worst thing children in her class did, what was a little thing they did that she felt they shouldn't, and what was something they did that pleased her. She was also asked to describe what she did or said when each of these behaviors occurred. Table 7 summarizes teachers' reports of what they considered the least desirable behavior of their children and broadly classifies their ways of handling these misbehaviors. Comparable data for mild infractions are presented in Table 8. Failure to listen was mentioned by three teachers from School # 2 and by one School # 1 teacher; taking things that didn't belong to the child was noted by two teachers from School # 2;

TABLE 7

Teachers' Reports of Severe Behavior Problems

| Severe Infractions | Teacher Reactions | |
|---|---|---|
| | N School #1 | N School #2 |
| Not listening | 1 Constructive | 2 Punishment<br>1 Punishment + Constructive |
| Taking things | 2 Constructive + Punishment | |
| Fighting | 1 Punishment | 1 Punishment + Constructive |
| Bad manners | | 1 Constructive |
| Lack of self-control | 1 Punishment | |
| No response | | |
| Total | 5 | 6 |

TABLE 8

Teachers' Reports of Mild Behavior Problems

| Mild Infractions | Teacher Reactions | | | |
|---|---|---|---|---|
| | N | School # 1 | N | School # 2 |
| Speaking out of turn | 1 | Constructive | 2 | Punishment + Constructive |
| Running around the room | 2 | Constructive | 1 | Punishment + Constructive |
| Tattling | | | 1 | Punishment + Constructive |
| Fighting | | | 1 | Punishment |
| Lack of initiative | 1 | Constructive | | |
| No response | 1 | | 1 | |
| Total | 5 | | 6 | |

and the remaining severe problems were cited by individual teachers. Teacher reactions to these problems that provided the children with a reasonable explanation for why their behavior was unacceptable, or which suggested an alternative activity that was acceptable, were considered constructive. All other types of responses were classified as punishments. It can be seen from Table 7 that punishment responses to severe infractions were given by more teachers from both schools than were constructive responses. The reverse was true, however, for behaviors that were considered less disruptive by the teachers (Table 8). All teachers in School # 1 who responded to this item gave reactions that were classified as constructive, and only one teacher in School # 2 gave a strictly punitive response. Apparently, the teachers were better able to handle problems that they classified as relatively minor than those they considered severe.

The uniform reaction reported by all teachers when the children did something that pleased them was to provide verbal praise (Table 9). Activities that reflect initiative were the most frequently mentioned desirable behaviors by teachers from School # 2; responses of the School # 1 teachers were more diverse.

The checklist of educational objectives was completed independently by the teachers--one teacher from School # 2 failed to return the form. From the list of program focuses presented in Table 10, each teacher marked the three most descriptive of her class. Eight of the 10 teachers responding to this question selected "social experience" as one of the primary focuses of their programs. Most of the teachers at School # 1 also checked language and the "whole child" as primary program orientations. School # 2 teachers tended to emphasize the development of the child's self-concept. The emphases of the kindergarten programs apparently were primarily in social-

TABLE 9

Child Behaviors That Please Teachers

| Child Behaviors | Teacher Reactions | |
|---|---|---|
| | N School # 1 | N School # 2 |
| Activities done through children's initiative and independence | 1 Verbal praise | 3 Verbal praise<br>1 No response |
| Sharing things | 2 Verbal praise | |
| Verbalizing problem rather than fighting | 1 Verbal praise | |
| Good attitude | 1 Verbal praise | |
| Courteous | | 1 Verbal praise |
| No response | | 1 |
| Total | 5 | 6 |

TABLE 10

Program Focus of Kindergarten Classes

| | School # 1 | School # 2 | Total |
|---|---|---|---|
| 1. Parent-centered | | 1 | 1 |
| 2. Child-centered | 1 | 1 | 2 |
| 3. Family-centered | | 1 | 1 |
| 4. Teacher-centered | | | |
| 5. Material-centered | | | |
| 6. Task-oriented | 1 | | 1 |
| 7. Mental health-oriented | 1 | | 1 |
| 8. Language-oriented | 2 | 4 | 6 |
| 9. Social experience-oriented | 4 | 4 | 8 |
| 10. Concept-oriented | 2 | | 2 |
| 11. Academically oriented | | | |
| 12. Reading-oriented | | | |
| 13. Self-concept-oriented | 3 | | 3 |
| 14. The "whole child"-oriented | 1 | 4 | 5 |
| 15. Other (Specify)_____ | | | |
| Total | 15 | 15 | 30 |

Note.--Each teacher chose three focuses.

emotional development rather than in cognitive or academic areas. Some further evidence of this is seen in Table 11. When asked to select five educational goals from a list of 40, the most frequent choice was "working and playing cooperatively." The other goals mentioned by several teachers from both schools were for children to learn to follow directions and to feel secure in school. School # 1 teachers also emphasized the development of self-confidence and the ability of the child to use his knowledge more effectively. Although the focuses on following directions and on adaptive use of information suggest some concern with cognitive functioning, in general the goals chosen reflect an emphasis on the affective domain. No teacher, for example, checked reliance on verbal communication rather than on gestures, or the development of problem-solving abilities as goals in her curriculum.

The teachers were also asked to check the teacher-roles most descriptive of themselves from the list of alternatives presented in Table 12. All teachers described themselves as "motivators" and one-half as "transmitters of knowledge and skills." Those from School # 1 also tended to define their roles as designers of learning experiences and as arrangers of reinforcement contingencies. These choices undoubtedly reflect their relatively recent training in comparison with the teachers from School # 2.

Analysis of Test Data

Children in both FYHS groups were administered a variety of tests, including the WPPSI Performance Scale and Stanford-Binet, in the fall of 1967 and again in the spring of 1968 in accordance with the requirements of the 1967-68 national Head Start evaluation. The WPPSI Performance Scale was also included in the follow-up battery administered to these children in the spring of 1969. Thus, intelligence test data for most of the FYHS children

TABLE 11

Educational Goals of Kindergarten Classes

| | School# 1 | School# 2 | Total |
|---|---|---|---|
| 1. Participation in group activities | | 2 | 2 |
| 2. Trust of adults | 1 | | 1 |
| 3. Familiarity with books, paper, crayons, pencils, etc. | | 1 | 1 |
| 4. Observing safety habits | | | |
| 5. Going to the toilet alone | | | |
| 6. Tidiness | 1 | | 1 |
| 7. Handling books carefully | | | |
| 8. Enjoying stories | | 2 | 2 |
| 9. Standing up for his own rights | | | |
| 10. Reading | | | |
| 11. Speaking more | | | |
| 12. Solving problems | | | |
| 13. Using what he knows more effectively | 3 | | 3 |
| 14. Speaking clearly | | 1 | 1 |
| 15. Thinking logically | 1 | | 1 |
| 16. Identifying cause-effect relationships | | | |
| 17. Enjpying other children | | | |
| 18. Accepting new people without fear | | | |
| 19. Taking turns | 1 | 2 | 3 |
| 20. Feeling secure in a school situation | 4 | 1 | 5 |
| 21. Caring for and picking up materials | | 1 | 1 |
| 22. Following directions | 4 | 3 | 7 |
| 23. Putting on and taking off his own wraps | | | |
| 24. Completing a task before starting another | | | |
| 25. Observing good health practices | | | |
| 26. Relying on verbal communication more than on gesture | | | |
| 27. Working and playing cooperatively | 3 | 5 | 8 |
| 28. Respecting the rights of others | 1 | 2 | 3 |
| 29. Sharing ideas and materials | 1 | | 1 |
| 30. Using good table manners | | | |
| 31. Working independently | | 2 | 2 |
| 32. Leading effectively | | | |
| 33. Following effectively | | | |
| 34. Accepting group decisions | | | |
| 35. Expressing his negative feelings | | | |
| 36. Expressing his positive feelings | 1 | | 1 |
| 37. Being confident of himself | 4 | 2 | 6 |
| 38. Accepting authority | | | |
| 39. Showing mastery of quantitative concepts and operations | | | |
| 40. Other (Specify)_____ | | 1 | 1 |
| Total | 25 | 25 | 50 |

Note.--Each teacher chose five goals.

TABLE 12

Self-Concepts of Kindergarten Teachers

| | School # 1 | School # 2 | Total |
|---|---|---|---|
| 1. Transmitter of knowledge and skills | 2 | 3 | 5 |
| 2. Motivator | 5 | 5 | 10 |
| 3. Problem solver | | | |
| 4. Transmitter of culture | | | |
| 5. Model of behavior | | 1 | 1 |
| 6. Hypothesis tester or experimentalist | | | |
| 7. Classroom manager | 1 | 2 | 3 |
| 8. Agent of change | | | |
| 9. Professional specialist | | | |
| 10. Socializing agent | 1 | 1 | 2 |
| 11. Diagnostician | | | |
| 12. General professional | | 1 | 1 |
| 13. Designer of learning and experience | 3 | 1 | 4 |
| 14. Developer of human potential | 1 | 2 | 3 |
| 15. Group processes specialist | | | |
| 16. Arranger of reinforcement contingencies or success experiences | 3 | 1 | 4 |
| 17. Transmitter of moral standards or values | | 2 | 2 |
| 18. Developer of knowledge and skills | 1 | 1 | 2 |
| 19. Administrator | | | |
| 20. Pupil/parent advisor, counselor | | | |
| 21. Observer | 1 | | 1 |
| 22. Demonstrator | | | |
| 23. Record keeper | 1 | | 1 |
| 24. Analyst (behavior, achievement, etc.) | 1 | | 1 |
| 25. Other (Specify)_____ | 1 | | 1 |
| Total | 20 | 20 | 40 |

Note.--Each teacher chose four concepts.

were available near the beginning of Head Start, near the end of the full-year program, and one year later, towards the end of kindergarten. Most of the FYHS children also attended Head Start in the summer of 1968, but they were not tested following the summer program.

Children in the SHS groups were given the WPPSI Performance Scale in July, 1968, in the early weeks of summer Head Start. Some of these children had also taken the Stanford-Binet in the spring of 1968. The SHS groups were not retested at the end of the summer program but were administered the follow-up battery in the spring of 1969 at the same time as the FYHS groups. In comparisons of the kindergarten performance of children exposed to a full-year Head Start program with those who attended a summer program only, it was desirable to use previous data where appropriate as a covariate in the analyses. The most relevant and complete data across subjects was the WPPSI Performance IQ obtained prior to extensive exposure to Head Start (i.e., in the fall of 1967 for FYHS and in the summer of 1968 for SHS children). These data were not complete, however, due to untestability of some subjects, absences, and invalid testing by one examiner. In order not to reduce the small sample further, for five subjects in FYHS School # 1 and one subject in SHS School # 2, for which appropriate Binet but not WPPSI data were available, the Binet IQ's were used in the covariate analyses. In view of the fairly high correlations between the tests (see WPPSI Manual, p. 34, and Appendix) this substitution seemed justifiable. In order to make the IQ data even more comparable, all IQ's were converted to Z scores using standard deviations of 15 and 16 for the WPPSI and Stanford-Binet scores, respectively. The means of the covariates when 100 was added to each Z score were 99.43 and 99.12 for the School # 1 FYHS and SHS groups, respectively, and 99.43 and 99.23 for the comparable School # 2 groups.

WPPSI Results

The means and standard deviations for the Verbal subtests of the WPPSI for FYHS and SHS groups administered near the end of kindergarten are presented in Table 13. The analysis of covariance for these subtests based on the adjusted means is given in Table 14. No significant differences were found between FYHS and SHS children or between children attending one or the other of the two schools on any Verbal subtests or on total Verbal IQ. Additionally, there were no significant interactions between length of Head Start participation and attendance at either school for any of the verbal measures.

Table 15 provides the means and standard deviations for the WPPSI Performance subtests and the overall WPPSI IQ. The analysis of covariance for these data is summarized in Table 16. As with the Verbal subtests, there were no significant results for any of these measures. It is of interest, however, to note the markedly superior functioning of all groups of children on the Performance subtests in comparison with the Verbal subtests. The magnitude of the differences suggests that previous exposure to the Performance subtests would be a highly unlikely explanation for these findings. On Performance subtests the children on the average earned scores clearly within the normal range, whereas on the Verbal subtests they tended to perform at one standard deviation or more below the mean for their ages. Within the Performance Scale the groups consistently did best on the two tasks requiring the use of a pencil, in one case to copy geometric figures and in the other to draw a path from the starting point to the exit of a series of mazes. Within the Verbal Scale, the Arithmetic test produced the highest scores and the Vocabulary subtest the lowest. It would be of interest to investigate whether these findings for specific subtests are related to program emphases or activities within these kindergarten curricula or

TABLE 13

Means and Standard Deviations for
WPPSI Verbal Scale and Verbal IQ
(Spring 1969)

| Test | Group | N | Mean | SD |
|---|---|---|---|---|
| Information | School 1 | | | |
| | FYHS | 14 | 7.43 | 2.21 |
| | SHS | 7 | 7.43 | 2.94 |
| | School 2 | | | |
| | FYHS | 14 | 6.93 | 2.20 |
| | SHS | 13 | 8.23 | 3.19 |
| Comprehension | School 1 | | | |
| | FYHS | 14 | 6.21 | 2.91 |
| | SHS | 7 | 7.00 | 2.71 |
| | School 2 | | | |
| | FYHS | 14 | 6.64 | 3.25 |
| | SHS | 13 | 7.31 | 2.18 |
| Arithmetic | School 1 | | | |
| | FYHS | 14 | 8.79 | 1.97 |
| | SHS | 7 | 9.43 | 2.44 |
| | School 2 | | | |
| | FYHS | 14 | 8.43 | 2.80 |
| | SHS | 13 | 8.23 | 2.31 |
| Similarities | School 1 | | | |
| | FYHS | 14 | 6.71 | 3.79 |
| | SHS | 7 | 7.00 | 2.94 |
| | School 2 | | | |
| | FYHS | 14 | 7.43 | 3.52 |
| | SHS | 13 | 7.54 | 2.44 |
| Vocabulary | School 1 | | | |
| | FYHS | 14 | 6.07 | 2.56 |
| | SHS | 7 | 6.14 | 1.21 |
| | School 2 | | | |
| | FYHS | 14 | 5.86 | 3.23 |
| | SHS | 13 | 7.00 | 3.03 |
| WPPSI Verbal IQ | School 1 | | | |
| | FYHS | 14 | 82.43 | 11.65 |
| | SHS | 7 | 83.71 | 13.01 |
| | School 2 | | | |
| | FYHS | 14 | 81.50 | 13.59 |
| | SHS | 13 | 85.38 | 11.13 |

TABLE 14

Analysis of Covariance for WPPSI Verbal Scale

| Test | Source | df | Adjusted SS | MS | F |
|---|---|---|---|---|---|
| WPPSI Verbal Subtests | | | | | |
| Information | A (Schools) | 1 | .06 | .06 | .01 |
| | B (FYHS vs. SHS) | 1 | 11.25 | 11.25 | 1.95 |
| | AB | 1 | 3.72 | 3.72 | .64 |
| | Error | 43 | 248.28 | 5.77 | |
| Comprehension | A (Schools) | 1 | .98 | .98 | .14 |
| | B (FYHS vs. SHS) | 1 | 11.81 | 11.81 | 1.64 |
| | AB | 1 | .16 | .16 | .02 |
| | Error | 43 | 308.98 | 7.18 | |
| Arithmetic | A (Schools) | 1 | 7.89 | 7.89 | 1.58 |
| | B (FYHS vs. SHS) | 1 | 3.10 | 3.10 | .62 |
| | AB | 1 | 2.54 | 2.54 | .51 |
| | Error | 43 | 214.70 | 4.99 | |
| Similarities | A (Schools) | 1 | 3.05 | 3.05 | .33 |
| | B (FYHS vs. SHS) | 1 | 4.65 | 4.65 | .51 |
| | AB | 1 | .34 | .34 | .04 |
| | Error | 43 | 391.96 | 9.11 | |
| Vocabulary | A (Schools) | 1 | 1.91 | 1.91 | .25 |
| | B (FYHS vs. SHS) | 1 | 1.90 | 1.90 | .25 |
| | AB | 1 | 1.90 | 1.90 | .25 |
| | Error | 43 | 324.89 | 7.55 | |
| WPPSI Verbal IQ | A (Schools) | 1 | 1.00 | 1.00 | .01 |
| | B (FYHS vs. SHS) | 1 | 247.00 | 247.00 | 2.19 |
| | AB | 1 | 10.00 | 10.00 | .09 |
| | Error | 43 | 4841.00 | 112.55 | |

TABLE 15

Means and Standard Deviations for WPPSI Performance Subtests, Performance IQ, and Full-Scale IQ (Spring 1969)

| Test | Group | N | Mean | SD |
|---|---|---|---|---|
| Animal House | School 1 | | | |
| | FYHS | 14 | 9.79 | 2.12 |
| | SHS | 7 | 9.14 | 1.68 |
| | School 2 | | | |
| | FYHS | 14 | 9.14 | 3.21 |
| | SHS | 13 | 9.15 | 1.86 |
| Picture Completion | School 1 | | | |
| | FYHS | 14 | 10.71 | 2.27 |
| | SHS | 7 | 9.00 | 4.00 |
| | School 2 | | | |
| | FYHS | 14 | 10.50 | 2.82 |
| | SHS | 13 | 9.54 | 2.57 |
| Geometric Designs | School 1 | | | |
| | FYHS | 14 | 10.36 | 2.56 |
| | SHS | 7 | 11.14 | 2.97 |
| | School 2 | | | |
| | FYHS | 14 | 10.21 | 3.29 |
| | SHS | 13 | 10.46 | 3.07 |
| Block Designs | School 1 | | | |
| | FYHS | 14 | 8.86 | 2.48 |
| | SHS | 7 | 9.71 | 2.29 |
| | School 2 | | | |
| | FYHS | 14 | 9.29 | 2.67 |
| | SHS | 13 | 9.38 | 2.75 |
| Mazes | School 1 | | | |
| | FYHS | 14 | 10.86 | 2.38 |
| | SHS | 7 | 10.57 | 3.31 |
| | School 2 | | | |
| | FYHS | 14 | 10.50 | 3.01 |
| | SHS | 13 | 10.38 | 2.63 |
| WPPSI Performance IQ | School 1 | | | |
| | FYHS | 14 | 100.71 | 9.59 |
| | SHS | 7 | 102.29 | 11.80 |
| | School 2 | | | |
| | FYHS | 14 | 99.64 | 14.34 |
| | SHS | 13 | 98.69 | 13.76 |
| WPPSI Full-Scale IQ | School 1 | | | |
| | FYHS | 14 | 90.29 | 10.30 |
| | SHS | 7 | 91.71 | 11.79 |
| | School 2 | | | |
| | FYHS | 14 | 89.14 | 13.02 |
| | SHS | 13 | 90.92 | 11.61 |

TABLE 16

Analysis of Covariance for WPPSI Performance Scale and WPPSI Full-Scale IQ

| Test | Source | df | Adjusted SS | MS | F |
|---|---|---|---|---|---|
| WPPSI Performance Subtests | | | | | |
| Animal House | A (Schools) | 1 | 1.55 | 1.55 | .30 |
| | B (FYHS vs. SHS) | 1 | .01 | .01 | .00 |
| | AB | 1 | .84 | .84 | .16 |
| | Error | 43 | 221.95 | 5.16 | |
| Picture Completion | A (Schools) | 1 | .00 | .00 | .00 |
| | B (FYHS vs. SHS) | 1 | 8.93 | 8.93 | 1.28 |
| | AB | 1 | .58 | .58 | .08 |
| | Error | 43 | 300.52 | 6.99 | |
| Geometric Designs | A (Schools) | 1 | 10.00 | 10.00 | 1.39 |
| | B (FYHS vs. SHS) | 1 | 9.94 | 9.94 | 1.38 |
| | AB | 1 | 10.00 | 10.00 | 1.39 |
| | Error | 43 | 308.94 | 7.18 | |
| Block Designs | A (Schools) | 1 | .01 | .01 | .00 |
| | B (FYHS vs. SHS) | 1 | 6.33 | 6.33 | 1.03 |
| | AB | 1 | 2.08 | 2.08 | .34 |
| | Error | 43 | 263.64 | 6.13 | |
| Mazes | A (Schools) | 1 | 2.31 | 2.31 | .36 |
| | B (FYHS vs. SHS) | 1 | .94 | .94 | .14 |
| | AB | 1 | .13 | .13 | .02 |
| | Error | 43 | 278.31 | 6.47 | |
| WPPSI Performance IQ | A (Schools) | 1 | 88.00 | 88.00 | .76 |
| | B (FYHS vs. SHS) | 1 | 73.00 | 73.00 | .63 |
| | AB | 1 | 32.00 | 32.00 | .28 |
| | Error | 43 | 4989.00 | 115.99 | |
| WPPSI Full-Scale IQ | A (Schools) | 1 | 25.00 | 25.00 | .29 |
| | B (FYHS vs. SHS) | 1 | 181.00 | 181.00 | 2.10 |
| | AB | 1 | 1.00 | 1.00 | .01 |
| | Error | 43 | 3702.00 | 86.09 | |

are of a more general nature. The overall WPPSI results clearly support the common finding of a language deficit among disadvantaged children. In view of the limited emphasis placed on verbal skills by the kindergarten teachers, they also suggest a need for greater stress on cognitive areas and particularly on language development in the kindergarten curriculum.

Results of PSI, Gumpgookies, Inventory of Factors Affecting WPPSI Performance and "Work" Per cent

Means and standard deviations for the four other measures comprising the follow-up battery are summarized in Table 17. Statistical analyses of these data are presented in Table 18. Previous IQ scores were used as a covariate in the PSI analysis; age was the covariate for the analysis of Gumpgookies. The mean ages in months for the School # 1 FYHS and SHS groups, and the parallel School # 2 groups were 68.75, 67.56, 69.50, and 68.38, respectively. No covariate was used in the analysis of either the WPPSI "work" % or Inventory of Factors Affecting Test Performance.

A statistically significant finding among this group of tests was the higher "work" percentages earned by the children from School # 2. However, since the "work" % measure was an experimental one in which not all examiners were equally practiced, and since no other differences between schools were found, the finding perhaps represents tester variation rather than differences attributable to attendance at the different schools.

A trend toward a significant interaction between schools and amount of Head Start experience is noted for both the PSI and the Inventory of Factors Affecting Test Performance. On these measures children who attended FYHS at School # 1 or SHS at School # 2 performed better (i.e., earned higher PSI scores and Inventory scores) than those in the reverse situation. One extreme score (55) on the Inventory, however, inflated the overall mean of

TABLE 17

Means and Standard Deviations for Four Response Measures (Spring 1969)

| Test | Group | N | Mean | SD |
|---|---|---|---|---|
| Preschool Inventory | School 1 | | | |
| | FYHS | 14 | 51.64 | 6.03 |
| | SHS | 7 | 47.00 | 8.88 |
| | School 2 | | | |
| | FYHS | 14 | 48.79 | 8.02 |
| | SHS | 13 | 50.69 | 4.59 |
| WPPSI "Work" % | School 1 | | | |
| | FYHS | 16 | 87.32 | 9.74 |
| | SHS | 9 | 89.41 | 6.95 |
| | School 2 | | | |
| | FYHS | 16 | 92.21 | 5.78 |
| | SHS | 13 | 93.42 | 5.68 |
| WPPSI Inventory of Factors Affecting Test Performance | School 1 | | | |
| | FYHS | 16 | 14.56 | 4.23 |
| | SHS | 11 | 18.55 | 13.26 |
| | School 1 | | | |
| | FYHS | 17 | 16.53 | 9.71 |
| | SHS | 13 | 12.85 | 2.48 |
| Gumpgookies | School 1 | | | |
| | FYHS | 16 | 44.56 | 6.72 |
| | SHS | 9 | 44.11 | 5.25 |
| | School 2 | | | |
| | FYHS | 16 | 41.19 | 6.90 |
| | SHS | 13 | 45.77 | 3.94 |

TABLE 18

Summary of Analysis of Covariance (Preschool Inventory and Gumpgookies) and Analysis of Variance (WPPSI "Work"% and Inventory of Factors Affecting Test Performance)

| Test | Source | df | SS | MS | F |
|---|---|---|---|---|---|
| Preschool Inventory | A (Schools) | 1 | 2.00 | 2.00 | .06 |
| | B (FYHS vs. SHS) | 1 | 2.00 | 2.00 | .06 |
| | AB | 1 | 102.00 | 102.00 | 3.10 |
| | Error | 43 | 1414.00 | 32.88 | |
| WPPSI "Work" % | A (Schools) | 1 | 252.56 | 252.56 | 4.68* |
| | B (FYHS vs. SHS) | 1 | 34.68 | 34.68 | .64 |
| | AB | 1 | 2.44 | 2.44 | .05 |
| | Error | 50 | 2699.94 | 53.99 | |
| WPPSI Inventory of Factors Affecting Test Performance | A (Schools) | 1 | 48.17 | 48.17 | .71 |
| | B (FYHS vs. SHS) | 1 | .31 | .31 | .00 |
| | AB | 1 | 203.25 | 203.25 | 2.99 |
| | Error | 53 | 3608.60 | 68.09 | |
| Gumpgookies | A (Schools) | 1 | 11.32 | 11.32 | .31 |
| | B (FYHS vs. SHS) | 1 | 59.88 | 59.88 | 1.64 |
| | AB | 1 | 80.63 | 80.63 | 2.21 |
| | Error | 49 | 1790.12 | 36.53 | |

* $p < .05$

the SHS group from School # 1.

Unfortunately, appropriate age norms for the form of the PSI used in this study or for the Gumpgookies were not available at the time these data were analyzed. However, comparisons of scores of the kindergarten children with those earned by Hawaiian Head Start children participating in the 1968-69 national evaluation may provide some further basis for evaluating the data. The overall PSI raw score mean for the Head Start children near the end of the program was 40.53; the PSI range for the kindergarten groups was from 47.00 to 51.64. The overall mean Gumpgookies raw score was 40.55 for the Head Start children; the range for kindergarten groups was from 41.19 to 45.77. The Head Start sample made an average gain of 13.14 points on the PSI and of 4.96 points on Gumpgookies during the course of the year. There is perhaps no defensible basis for assuming that raw scores increases should be constant from one age grouping to the next. However, if one were to make this assumption, then it can be said that the follow-up children's rate of development in kindergarten as measured by PSI and Gumpgookies scores was somewhat slower than the rate of a group of Hawaiian Head Start children on these same measures.

Longitudinal Analysis of WPPSI Performance IQ's

Since WPPSI Performance IQ data were obtained for three successive years for a number of FYHS subjects and for two years for SHS subjects, it was of interest to see what IQ changes had taken place over these time periods. Mean WPPSI Performance IQ's for the FYHS and SHS groups for the various testing times are summarized in Table 19. Analyses of these data for the FYHS groups are presented in Table 20, and for the SHS groups in Table 21. Significant differences among the IQ's for the FYHS children from each school as well as for the combined group were obtained. That

TABLE 19

Mean WPPSI Performance IQ's for Successive Years for FYHS and SHS Children

| Group | N | Times of Test Administrations | | |
|---|---|---|---|---|
| | | Fall 1967 | Spring 1968 | Spring 1969 |
| FYHS | | | | |
| School 1 | 9 | 89.56 | 93.22 | 97.33 |
| School 2 | 14 | 91.50 | 95.29 | 99.64 |
| Combined Schools | 23 | 90.74 | 94.48 | 98.84 |
| SHS | | | | |
| School 1 | 8 | -- | 87.00 | 99.75 |
| School 2 | 12 | -- | 87.75 | 99.83 |
| Combined Schools | 20 | -- | 87.45 | 99.80 |

TABLE 20

Analysis of Variance of WPPSI Performance IQ's for FYHS Children for Three Successive Years

| Group | Source | df | SS | MS | F |
|---|---|---|---|---|---|
| School 1 | A (Subjects) | 8 | 1468.96 | 183.62 | |
| | B (Testing Times) | 2 | 272.52 | 136.26 | 5.11* |
| | Linear | 1 | 272.22 | 272.22 | 10.20** |
| | Quadratic | 1 | .30 | .30 | .01 |
| | Error | 16 | 426.81 | 26.68 | |
| School 2 | A (Subjects) | 13 | 5417.14 | 416.70 | |
| | B (Testing Times) | 2 | 464.90 | 232.45 | 7.46** |
| | Linear | 1 | 464.14 | 464.14 | 14.89** |
| | Quadratic | 1 | .76 | .76 | .02 |
| | Error | 26 | 810.42 | 31.17 | |
| Combined Schools | A (Subjects) | 22 | 6958.98 | 316.32 | |
| | B (Testing Times) | 2 | 737.04 | 368.52 | 13.10** |
| | Linear | 1 | 736.00 | 736.00 | 26.16** |
| | Quadratic | 1 | 1.04 | 1.04 | .04 |
| | Error | 44 | 1237.58 | 28.13 | |

* $p < .05$

** $p < .01$

TABLE 21

Analysis of Variance of WPPSI Performance IQ's for SHS Children for Two Successive Years

| Group | Source | df | SS | MS | F |
|---|---|---|---|---|---|
| School 1 | A (Subjects) | 7 | 1680.75 | 240.11 | |
| | B (Testing Times) | 1 | 650.25 | 650.25 | 12.48** |
| | Error | 7 | 364.75 | 52.10 | |
| School 2 | A (Subjects) | 11 | 2395.46 | 217.77 | |
| | B (Testing Times) | 1 | 876.04 | 876.04 | 6.93* |
| | Error | 11 | 1390.45 | 126.40 | |
| Combined Schools | A (Subjects) | 19 | 4077.88 | 214.62 | |
| | B (Testing Times) | 1 | 1525.22 | 1525.22 | 16.50** |
| | Error | 19 | 1756.28 | 92.44 | |

* $p < .05$

** $p < .01$

these differences reflect a progressive increase in IQ over time is indicated by the highly significant linear trend for each group analyzed separately and when the groups are combined. Examination of the means reveals that the overall increase in IQ of approximately eight points for the two-year period was divided about equally between the Head Start year and the kindergarten year. The kindergarten year also included summer Head Start attendance, but the effects of the two cannot be separated.

Examining the data for SHS children, one can see a highly significant increase in IQ from the first testing at the start of summer Head Start to the second testing near the end of kindergarten. Again the effects of the summer Head Start and kindergarten programs cannot be separated. What is especially interesting, however, is the finding that prior to any Head Start experience, the mean IQ's for FYHS and SHS groups were very similar, that of the FYHS children being slightly higher. However, the SHS children gained in IQ in approximately three-fourths of a year as much as--even more than--the FYHS children gained in twice that amount of time. Thus, at the time of the follow-up testing, the two groups were performing at essentially the same level. Secondly, assuming that the second-year gain for both groups did not take place primarily during the summer program, it is noteworthy that the children's IQ's continued to increase in kindergarten. The plateau effect that has sometimes been noted following an initial spurt in IQ after exposure to Head Start (e.g., Wolff & Stein, 1966) clearly was not in evidence for either the FYHS or SHS groups in this study.

## CONCLUSIONS AND RECOMMENDATIONS

The major results of this study revealed no significant differences between children who had attended Head Start for about a year and those who attended a summer program only, on a group of measures administered about eight months after the completion of the Head Start programs. Children who attended one Head Start Center and subsequently entered kindergarten at the associated elementary school did not perform significantly differently from those attending another Head Start Center and elementary school. This latter finding is not particularly surprising, since the schools were in the same general area and served essentially the same population and no extensive and consistent program, teacher, or other school differences were noted. Finally, children in the FYHS and SHS groups from both schools earned significantly higher IQ's (WPPSI Performance Scale) near the end of kindergarten than they had prior to exposure to Head Start. The average gain for the FYHS children was about eight points over a two-year period. The SHS children, who had slightly lower initial IQ's, gained approximately 12 points in one year. All groups of children thus clearly benefited from Head Start and their subsequent kindergarten experiences, although neither length of Head Start participation nor attendance at a particular Center or school was a significant variable.

The continued increase in IQ evidenced by the Head Start children in kindergarten is noteworthy, since previous studies have found a leveling-off effect following Head Start gains (Grotberg, 1969). The IQ increase does not seem to be related to particular teacher or program variables, since the children were distributed across 11 different kindergarten classes. The composition of the kindergarten classes of Head Start children

is a variable that may warrant further investigation. In this case, Head Start children were in the minority in all classes, although their non-Head Start peers were not from markedly different socioeconomic backgrounds.

The failure to find significant differences between FYHS and SHS children was consistent across all measures. Previous studies have noted that Head Start children are rated superior by teachers in such noncognitive areas as independence (Hess, 1966) and compliance with routine and responsiveness to authority (Krider & Petsche, 1967). When kindergarten teachers in this study were asked about their observations on the effects of Head Start, comments included similar statements to the effect that Head Start children made faster adjustments to school and assumed more responsibility than non-Head Start children. These are important contributions of Head Start, since they provide the child with attitudes and behaviors that enable him to learn more effectively in elementary school. The kindergarten gains made by all Head Start children tend to support this notion of the impact of Head Start. The failure to find significant differences between FYHS and SHS children raises the question, however, of whether a full year is necessary for the development of some of these "school-adaptive" characteristics. If the primary goal of Head Start is to enable the child to function more effectively in elementary school by teaching him appropriate school behaviors, then a summer program may be able to accomplish this as effectively as a full-year program. On the other hand, if Head Start is also to provide the child with significantly better cognitive skills, more extensive training would seem to be necessary. It is suggested that FYHS programs with defined curricula focused on cognitive development are more likely to result in differential performance between

children exposed to these curricula and those attending summer Head Start or no Head Start program at all. It is recommended, therefore, that future follow-up studies concentrate primarily on the long-range effects of such FYHS programs.

## APPENDIX

### Inter-correlations Among Follow-up Measures and Previous Intelligence Test Data

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Stanford-Binet (Fall 1967) | -- | .88** (19) | .56* (16) | .63** (22) | .42* (24) | .74** (24) | .67** (24) | -.02 (24) | .54** (24) | .05 (24) |
| 2. Stanford-Binet (Spring 1968) | .88 | -- | .50* (21) | .40* (35) | .59** (36) | .70** (34) | .72** (34) | -.28 (36) | .75** (36) | .45** (36) |
| 3. WPPSI Performance IQ (Fall 1967) | .56 | .50 | -- | .77** (23) | .79** (23) | .55** (23) | .77** (23) | -.22 (23) | .62** (23) | .24 (23) |
| 4. WPPSI Performance IQ (Spring and Summer 1968) | .63 | .40 | .77 | -- | .53** (50) | .44** (49) | .58** (49) | .02 (50) | .42** (50) | .17 (50) |
| 5. WPPSI Performance IQ (Spring 1969) | .42 | .59 | .79 | .53 | -- | .44** (54) | .83** (54) | -.36** (57) | .59** (57) | .39** (57) |
| 6. WPPSI Verbal IQ (Spring 1969) | .74 | .70 | .55 | .44 | .44 | -- | .87** (54) | -.27* (54) | .76** (54) | .27* (54) |
| 7. WPPSI Full-Scale IQ (Spring 1969) | .67 | .72 | .77 | .58 | .83 | .87 | -- | -.15 (54) | .71** (54) | .33* (54) |
| 8. WPPSI Inventory of Factors Affecting Test Performance[a] (Spring 1969) | -.02 | -.28 | -.22 | -.02 | -.36 | -.27 | -.15 | -- | -.64** (57) | -.45** (57) |
| 9. Preschool Inventory (Spring 1969) | .54 | .75 | .62 | .42 | .59 | .76 | .71 | -.64 | -- | .51** (57) |

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| 10. Gumpgookies (Spring 1969) | .05 | .45 | .24 | .17 | .39 | .27 | .33 | -.45 | .51 | -- |

Note.--Sample sizes are in parentheses.
[a]Low scores reflect more adaptive test behavior.

* $p < .05$
** $p < .01$

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