"MENTAL DEVELOPMENT AS RELATED

TO INSTITUTIONAL AND FOSTER HOME PLACEMENT."

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A T H E S I S

BY

MARY VERITY MITCHELL, B.Sc.

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CHAPTER I.

GENERAL DESCRIPTION OF INVESTIGATION

Introduction

Until comparatively recently, general intelligence was regarded as innately fixed, unmodifiable and relatively unaffected by environmental factors. However, results of research undertaken during the past two decades suggest that the intelligence of children may undergo modification under certain gross environmental conditions, in accordance with certain general and fairly clear principles. Although much more experimentation and investigation are necessary to supplement existing data, and although the tools of measurement require revision before any sound conclusions can be arrived at, one must be willing to accept the fact, that intelligence is possibly more plastic and modifiable than has hitherto been believed possible.

This whole question with reference to the effect of environment upon mental development is of interest to child welfare workers and educators, not only because of its theoretical implications, but also on account of its highly practical significance, for as long as intelligence is regarded as impervious to environmental influences, no educational or social improvement programme can be expected to yield appreciable results upon the intelligence level of the individuals for whom it was devised. Here in Montreal, the question has frequently arisen, as to whether the trends suggested by research undertaken in the United States with reference to environmental influences upon mental

development are apparent to any extent in groups of children placed under similar circumstances in the local area.

Statement of Problem

This study was therefore initiated to determine the relative effect of foster home and institutional placement upon the mental development of two groups of children, issuing from homes in the lower socio-economic levels, who were placed under the care of a children's agency for varying lengths of time.

One of these groups consists of 85 children who resided in foster homes and the other, of 80 children, who resided in institutions.

Subjects

1. Source:

The subjects included in this study were all active cases under the care of the Children's Service Association, Montreal, at the time of the present investigation. This organization is one of thirty-three Protestant welfare agencies comprising Financial Federation. "It aims (1) to obtain the enactment of laws and regulations for the care and protection of children and the proper enforcement of same; (2) to facilitate cooperation in fiscal and social planning between child-caring agencies having membership in the Montreal Council of Social Agencies and (3) to cooperate with all charitable societies in the care of destitute and neglected children."(22)

Children residing in foster homes were under the imme-

diate supervision of the Protestant Foster Home Centre. "This agency accepts from the Children's Service Association for temporary care pending study of his needs, any Protestant child who requires care outside his own home; and provides for Protestant children of all ages, sexes and races, substitute parent care in good foster homes."(22)

Children receiving institutional care resided either at the Montreal Ladies' Benevolent Society Home, or at the Montreal Protestant Orphans' Home. Both of these institutions are under the supervision of the Children's Service Association and "provide care for boys from 6 to 11 years of age, and for girls from 6 to 14 years, or until such times as they are re-established either in their own homes, or in the homes of relatives or friends, or until they become self-supporting."(22)

2. Source of Case Data:

Case data were derived from the confidential files of the Children's Service Association, the Protestant Foster Home Centre and the Mental Hygiene Institute, this latter organization being responsible for the mental health examination given all children upon acceptance for care by the Children's Service Association.

Three different records were consulted to obtain the necessary data concerning each child residing in a foster home. One of these records contained data relative to the child prior to and during placement; the second, the results of psychiatric and psychological examinations; and the third, details concerning the foster home.

In the case of institutional placements, two records were consulted in each instance, these being the Children's Service Association record which contained data relative to the true family background and the Mental Hygiene Institute record which contained the findings of the mental health examination.

In all 415 records were consulted.

3. Selection of Subjects:

Criteria:

A. Foster Home Cases:

(1) Children selected for this investigation were between 2 and 14 years of age. This age range was selected because the largest percentage of cases under the supervision of the Protestant Foster Home Centre fall into this age category; and in order that values resulting from this study be directly applicable to as large a group as possible of children in receipt of foster home care.

(2) Under no circumstances were cases included where co-operation was poor during either one of the test periods, where there was evidence of foreign language handicap, speech, visual or auditory defect, active physical disease, or fatigue or insecurity on the part of the child during the examination period.

(3) An attempt was made to include only children who had been exposed to a constant environment throughout the placement period. This plan, however, did not combine satisfactorily with other criteria utilized in the selection of subjects, and in order to obtain a reasonably sized sampling of the age group under consideration, children were also included who had been exposed to

several foster home environments.

(4) Children placed in foster homes very shortly after birth were excluded since these had never been exposed to a "true" home environment.

(5) In some instances, children eligible for inclusion were excluded on account of illness during the period when the post-placement examinations were held, or on account of the fact that they were placed in rural homes and consequently inaccessible for examination purposes.

(6) To ensure that the results of pre-placement and post-placement intelligence tests be comparable on a reliable basis, only those children were included who had been examined prior to placement, through the medium of either the Stanford-Binet Intelligence Scale (1916) or the Revised Stanford-Binet Intelligence Scale (1937). This necessitated exclusion of some children, since in certain instances, children were placed before two years of age and examined at that time by means of either the Gesell Developmental Schedule, the Merrill-Palmer, or the Kuhlmann-Binet Intelligence Scales whereas during the post-placement examination, one of the Binet Revisions was administered. Owing to differences in standardization of the tests utilized, test results were under such circumstances not wholly comparable.

B. Institutional Cases:

All children residing in the Montreal Ladies' Benevolent Home and the Montreal Protestant Orphans' Home were included with the following exceptions:

(1) Children examined prior to placement through the medium of a pre-school intelligence test (e.g., Gesell, Merrill-Palmer, Kuhlmann).

(2) Children residing in the institution for less than three months.

(3) Children handicapped by speech, visual or auditory defect, foreign language limitations, or active physical disease.

(4) Children who manifested evidence of fatigue, insecurity or poor cooperation during either of the test periods.

MEASUREMENTS

1. Intelligence:

A. Tests:

A test of general intelligence was administered to all subjects prior to and during the placement period. The scales utilized were the Stanford-Binet[53] and the Revised Stanford-Binet (Form L) Intelligence Scales.[55]

Upon re-examination, the same revision of the Binet Scale was administered as during the pre-placement examination in 76% of the cases. In 24%, a different revision was utilized. Under such circumstances, the post-placement examination was administered prior to commencement of the present investigation and a different revision was purposely employed as a check on the ori-

ginal test findings.

Since both the 1916 and 1937 revisions of the Binet Intelligence Scale were utilized during the present investigation, some consideration concerning the relationship between scores derived from these two revisions is essential.

Terman and Merrill (55) in order to determine the extent to which scores on the Stanford Revision of the Binet Intelligence Scale (1916) may be considered equivalent to results yielded by the new scale, administered the former test to 178 subjects of the revision group. These subjects ranged in chronological age from 5 to 18 years and were re-tested at a mean interval of 5 months between examinations. For the age group 5 to 12 (123 cases) the Stanford-Binet IQ correlates .864 with the Revised Stanford-Binet IQ (Form L). For the age group 13 - 18 (55 cases) the correlation is .884. These correlations are vitiated somewhat by the fact, that the Stanford-Binet Scale as judged by the standardization of the new revision, yields mental ages slightly too high at the younger ages and somewhat too low at the older levels. The Revised Stanford-Binet Scale (Form L) was administered to 120 individuals who had previously been tested with the Stanford-Binet Scale. Intervals between tests ranged from 1 to 6 years. Ages ranged from 5 at the time of testing with the Stanford-Binet to 18 at the time of testing with the Revised Stanford-Binet (Form L). The correlation between scores was .925. This correlation is about as high as the respective variabilities of the scale would permit and Terman and Merrill conclude that the new scale measures the same func-

tions as are measured by the Stanford-Binet Scale.

Reymert and Meister[42] found on the basis of data collected from 440 normal children who had taken over 900 Stanford-Binet and over 800 Revised Stanford-Binet examinations that (1) reliabilities for both scales were .80; (2) in both scales children with low IQ gained more upon retest than those of average IQ, while those of superior IQ tended to lose; (3) in the original scale there was a small increase in net gain with increasing age, while a decrease in the amount of gain appeared in the revised scale.

Ebert[21] compared the performance of 315 children on the Stanford-Binet and Revised Stanford-Binet Intelligence Scales. These children were between the ages of 5 and 10 years and were of superior social and economic status. It was found at age 6 that fairly comparable results from both tests were obtained, but at ages 7, 8 and 9 there was an increasing discrepancy between IQ's derived from the two scales. For IQ levels below 100, the Revised Stanford-Binet Scale tends to give slightly lower IQ's than does the Stanford-Binet Scale. For IQ levels above 100 the new revision tends to give higher results. Apparently, the higher the IQ level, the greater the discrepancy between the IQ's on the two scales. With the Revised Stanford-Binet Revision, there was a tendency for IQ to increase with age for both dull and bright children whereas the Stanford-Binet Scale showed a tendency for the duller individuals to gain and the brighter to lose in IQ scores. The Revised Stanford-Binet Revision gave higher year to year correlations with repetition than the Stanford-Binet Scale.

B. Test Administration:

Intelligence tests were administered by two examiners highly skilled in examining methods and with considerable experience in the psychological testing field. Seventy percent of the pre-placement tests were administered by the writer and all of the post-placement tests.

C. Test Environment:

All pre-placement and practically all post-placement examinations were administered at the Mental Hygiene Institute. The test environment was, therefore, identical during both test periods for the majority of subjects. About 30% of the post-placement examinations of children residing in institutions were held at the institution in which the children resided.

D. Range of Testing:

In all instances, testing was continued from an age level where all tests were passed to one where all were failed.

E. Adult Mental Age:

In the original Stanford-Binet Scale[53](1916 revision), adult mental age was tentatively placed at 16 years and chronological age above this point was disregarded in computing the IQ's of older subjects. In computing IQ's based on the 1937 revision, chronological age beyond 15 is disregarded. However, in keeping with the fact that age improvement ceases gradually, rather than abruptly, Terman and Merrill[55]recommend that 13 years be taken as the point at which to disregard increasing fractions of successive chronological age increments. During

the present investigation, when comparing scores derived from pre-placement and post-placement intelligence tests, in instances where a different Binet revision was administered during each examination period, it was unnecessary to take the question of adult mental age into consideration, since at the time of the initial examination, subjects were of such an age that the true chronological age was utilized in computation of the IQ.

2. Environment:

Although for years students of human behaviour have stressed the significance of environment in shaping conduct, relatively few instruments have been devised with which to measure environment.

An extensive survey made by the writer of scales devised for the evaluation of home environment and also of the methods utilized by research experts dealing with problems requiring an estimate of socio-economic status, reveals a definite lack of suitable measures purporting to appraise not only the physical and material aspects but also the psychological attributes of a given environment.

Leahy[35] describes in considerable detail, the various measures devised to measure "home conditions, social status, or socio-economic level". Nearly all of these scales are largely some form of "counting" measures of various objects, either possessed or not possessed by a family. They have been standardized and used almost exclusively on urban populations with

school-age children in the home. The majority are usable only with school-age children to whom they are given as paper and pencil tests. They contain many items not applicable at the pre-school ages and omit some which might be diagnostic at the younger ages. Ranges in score and mean scores for groups; or special or occupational classes based on sufficiently large numbers are not generally available. The value of the scales is affected by changes in social customs and necessities in different times and places.

The general consensus of opinion among experts is that existing scales of socio-economic status are applicable as a rule only to groups similar to those on whom the scale was standardized.

Of the scales studied, the Minnesota Home Status Index[35] appeared to be the most suitable for use in the present investigation. However, it was impossible to utilize even this scale, due to the fact, that much of the detailed data it requires with reference to true and foster home environment were not available in the case records. This is to be expected since pressure of work prohibits case workers from recording anything but absolute essentials concerning home environment.

In the present study, therefore, no rating scale was employed for the appraisal of home environment. Occupational status of true and foster parents was rated according to the method utilized in the Minnesota Home Status Index[35] for the evaluation of occupational status.

CHAPTER II

CONCEPTS OF INTELLIGENCE AND ENVIRONMENT

1. Intelligence Defined:

Since this study is concerned with the effect of certain environmental influences upon the general intelligence level, some discussion with reference ~~as~~ to the implications of the terms "general intelligence" and "environment" is indicated.

Until 1925, attempts to define intelligence were chiefly concerned with descriptions of individuals who were lacking in intelligence. As a result, there exists in the literature, many definitions of mental deficiency couched in terms of what the mentally defective person is like, but few attempts at defining the trait in which such an individual is alleged to be deficient.

In 1921, a number of leading psychologists[52] expressed their views with reference to the nature of intelligence. Their points of view upon first consideration appear to be rather diverse, but the differences in opinion are much more apparent than real. While some experts defined intelligence as the ability to adjust to new situations; others defined it as the ability to profit by experience. Since the best test of the extent to which an individual has profited by his experience is to be found in his ability to apply the knowledge thus gained to new situations, the two concepts finally reduce themselves to much the same idea.

Thorndike[57] believes that intelligence is pragmatically demonstrable in the ability of the individual to make "good

responses from the standpoint of truth or fact". This definition is in accord with everyday practice in the judgment of intelligence from behaviour, but it does not offer any clue as to the types of behaviour that make the most demand upon intelligence. This, however, is in accordance with Thorndike's general view, that intelligence is not a unitary trait and that an individual has not intelligence but "intelligences", that the act not the trait is the unit, and that the inter-correlations between abilities are the result of overlapping elements in the acts by which these abilities are manifested. He, therefore, defines intelligence in terms of the kinds of tasks which the individual is called upon to perform and lists the level, range, area and speed as essential characteristics.

Terman[53] asserts that an individual "is intelligent in proportion to his ability to carry on abstract thinking" and thus he implicitly differentiates the capacity to deal with concrete or mechanical situations and the ability to handle symbols, to see relationships and to solve problems.

Spearman[49,50] has advanced the view that two integers are fundamental in any consideration of the abilities of man. The first is "g", a factor common to some degree in all tasks; the second, "s", is the specific phase, characteristic in particular activities or situations. The "g" factor, essentially intellectual, involves "apprehension of one's own experience, the education of relations, and the education of correlates."

According to Kelly[32] and Thurston,[58] ability is composed of a limited number of primary abilities, each one of which is

relatively independent of the others. No one of these abilities may be called intelligence, but intelligence may be thought of as a sum of all, since no one of the abilities is general.

According to Stoddard,[51] intelligence is "the ability to undertake activities that are characterized by (1) difficulty, (2) complexity, (3) abstractness, (4) economy, (5) adaptiveness to a goal, (6) social value, and (7) the emergence of originals, and to maintain such activities under conditions that demand a concentration of energy and resistance to emotional forces." This definition brings together what Stoddard considers as the principal attributes of a functional concept of intelligence.

2. The Meaning of Environment:

According to Warren[60] the word environment is "a term covering all physiochemical, biological and social phenomena, which act from without upon organisms. Environmental factors are those factors which act upon the organism from without and influence its structure and behaviour."

"For years, philosophers have attempted to describe in clearcut terms what is contributed by the external world and what by the individual in mental acts such as perception. In general, the systems of thought that may be called 'the idealisms' accept one view of this relationship and those called 'the realisms' accept another. Physiologists and psychologists are now agreed that the receptors, or sense organs of human be-

ings and infrahuman animals are the main avenues by means of which external environmental factors act upon the total individual, and that a sense organ is only activated by some change in the external energies directly affecting the receptor or by some alteration in the relationship between the receptor and an external energy. Those energies are technically described not as 'objects of the real world', but as vibrations of a given amplitude and frequency per second, and the like. The effective external environment acting upon an organism at any given time may thus be described as the sum total of the energies that are at that time releasing sense organ activity."(64)

In addition to the term external environment the term internal environment is used. The internal environment includes those energies inside the outer skin of the organism that act upon the internal sense organs or receptors. The term internal environment is also applied to organs adjacent to other internal organs that are at that time under consideration, and especially to the blood stream.

In psychiatry, in sociology and in applied psychology, the world about the organism in its real form is spoken of as the environment. "From this point of view, environment is taken as descriptive of a standard external world of objects that exist in time and space without regard to the location of activity of any special living organism. Thus by definition, things or conditions that do not have some effect upon the individual are not actually a part of his environment. An individual must be in

some active relation to the factor or condition. Environment thus does not exist in the abstract apart from the individual."(64)

CHAPTER III

STUDIES OF MENTAL DEVELOPMENT OF YOUNG CHILDREN AS RELATED TO ENVIRONMENTAL CONDITIONS

During the past two decades, the question of the relationship of heredity and environment to intelligence has been the subject of much discussion in psychological and sociological literature.

Since the present study is concerned with the effect of two specific types of environment upon the mental development of children, a review of the literature related to the subject of IQ constancy is indicated. This review will be confined to a discussion of the results of studies closely related to the problem under consideration in the present investigation. Studies consisting chiefly of theoretical discussions will be excluded and also the rather extensive literature on twins. Results of previous research will be discussed under two main headings, namely:

1. The Mental Development of Children in a Relatively Constant Environment.
2. The Mental Development of Children under Conditions of Change in Environment.

1. The Mental Development of Children in a Relatively Constant Environment.

The results of research undertaken for the purpose of determining the predictive value of infant and pre-school intelligence tests, or the constancy of the intelligence quotient derived from such tests, are subject to conflicting interpretations.

However, the general consensus of opinion is that infant intelligence tests do not give a highly accurate prediction of what a child's future intelligence is likely to be. As a rule, the younger a child is at the time when he is tested, the less reliable will be the predictive value of his score, although even in early infancy an exceedingly poor or superior rating may have significance for the future. Ratings on consecutive tests tend to show a good deal of resemblance, but the longer the interval between two tests, the lower the resemblance is likely to be. Bayley[4] found a positive correlation of .57 between average (sigma) scores at 1 to 3 months and at 4 to 6 months, and a correlation of .42 between scores at 1 to 3 and 7 to 9 months. As the interval increased, the correlation decreased so that there was practically a zero correlation between 1 and 3 months and scores beyond the age of 12 months. There was evident, however, a tendency for the scores to become more stable as the children grew older; thus average scores at 13 to 15 months showed a correlation of .70 with a child's average ratings at 18 to 24 months, and a correlation of .54 with average ratings at 27, 30 and 36 months.

Murfey and Muehlenbein[25] compared the scores of 71 children at 6 to 12 months with scores at 4 years, 8 months and show a relationship of .00.

Cunningham[15] compared the results of Kuhlmann tests of children examined at 1 year with Stanford IQ's at 8 years and found that there was a tendency for loss in the group as a whole.

During the pre-school period there is a much closer re-

semblance between intelligence scores from month to month and year to year. Despite this, a child's performance at the age of 3 or 4 years of age does not always constitute a highly reliable estimate of what his IQ will be at the age of 8 years or older. Under ordinary circumstances, if the standardized testing procedure has been rigidly adhered to, and barring the presence of emotional factors, fatigue, or physical handicap at the time of the examination, it is highly probable that the IQ at 7 or 8 years of age or older will remain fairly close to that determined during the pre-school period. If a change in level does occur, the change will more likely be from an average to a superior rating, or the reverse, than from an average to a genius or feebleminded rating.

In general, results of infant and pre-school intelligence tests suggest that the IQ is much less constant than it is with older children. The correlations reported vary from approximately .45 to .95, with the bulk of the studies reporting correlations between .65 and .80

At the school age level and beyond, there is a relatively high degree of consistency from year to year in intelligence test ratings. Numerous studies show that the IQ remains constant, if constancy is defined as variability within an average of 5 IQ points, or if there exists a reasonably high correlation between test and retest. "Reported correlations range from .50 to .95 with the majority of studies showing results between .75 and .94 with a median of .83". (39)

Terman[54] and Hildreth[30] suggest a greater degree of IQ variability for younger children than for older. Terman is of the opinion that IQ level and intervals between tests are of no importance. On the other hand, the investigations of Burt,[9] Hildreth, Gray and Marsden[28] show that decreases or greater discrepancies occur for longer intervals between tests.

In a survey of superior children, Baldwin and Stecher[3] report a gain in IQ proportionate to the number of re-examinations. The studies of Wellman[61,62,63] as well as those of Lincoln[37] confirm the findings of Burks, Jensen and Terman[8] that the IQ of children with initial IQ's of 140 or above tend to drop. These results are contrary to those of Cattell,[10] who found very superior children gaining and inferior children losing. An unpublished study of Robertson's[43] reports that losses in IQ of very superior children apparently differ with different school environments.

Descoeudres[19] in a research project concerned with the intelligence of children in Special Classes found the IQ upon re-examination closely similar to that of the first examination, with a tendency to gain evident. Berry[5] found as a result of retests of some three hundred and ninety Special Class pupils, that "the intelligence quotient of pupils with an original IQ between 50 to 69 remained practically constant, while the intelligence quotient of pupils with an original IQ between 70 to 89 decreased. The decrease in IQ was greater among children 10 to 14 years of age at the time of the first test, than among those in the 6 to 9 year old age group. The test results also indicate,

that the greater the interval between tests, the greater the decrease in IQ."

Brown[6] in a study of some 700 behaviour problem children found that the amount of change from one examination to another was small. Fluctuations in IQ are not significantly greater than those of the normal child, but more than those of the feeble-minded.

Numerous studies have been made concerning the mental development of feeble-minded children. In some instances, the subjects were inmates of schools or institutions for the feeble-minded, others attended special classes in the public schools, and in some investigations, no indication was given as to the environmental background. Investigations undertaken by Kuhlmann,[33] Chipman,[11] Arthur,[2] Berry,[5] Anderson,[1] Woodall,[68] Prouty,[40] Davenport and Minogue,[16] and Doll,[20] indicate that feeble-minded children tend to lose in IQ. In the majority of these studies, differential losses are evident for groups of varying mental levels, the higher levels losing more in relation to the lower levels. Kuhlmann found that rate of decline increased with age and according to Chipman, greater variability in IQ occurred in the younger group.

2. The Mental Development of Children under Conditions of Change in Environment.

A. Children in Foster Homes:

Freeman[24] and his associates on the basis of measurements of 600 children attempted to show the effect of environment upon

the general intelligence level. Ratings were obtained of the intelligence of foster parents and of the material, social and cultural environments of the foster homes.

Among this large group of foster children there was a subgroup of 74 children of inferior socio-economic background. These children were examined prior to placement, their mean age being at that time 8 years and the mean IQ 91.2. When re-examined at a mean age of 12, the intervening period having been spent in the foster home, the mean IQ was 98.7. The change in IQ when corrected for change in age by the method suggested by Freeman may represent a gain of 7.5 points. A study of certain other subgroups showed that children in the better foster homes gained considerably more than did those in the poorer homes. Furthermore, children tested and adopted at an early age gained more than those adopted at a later age. According to Freeman, these facts seem to indicate that an improvement in environment produces a gain in intelligence

Burks[7] compared 214 adopted children placed before the age of 12 months, who were between 5 and 14 years old at the time of the investigation, with a control group of 105 "true" children equated for age and IQ with the adopted group. The mean IQ of the adopted children was 107; for the control group 115. Burks' estimate of gain in IQ points due to environmental shifts is from 3 to 9, as contrasted with Freeman's estimate from 7 to 10. According to Burks, the total possible increase from a very poor to an exceptionally good home might be from 9 to 27 IQ points.

Hallowell[29] studied 436 children between the ages of 36 and 47 months, who had been given two or more tests for placement purposes. Prior to the first test, these children had lived in poor environments and after the test were placed in boarding or foster homes superior to their own homes. A variety of intelligence tests were given and the scores were combined into developmental quotients. No prescribed method of determining these developmental quotients was given by the investigator and it is highly probable, that a certain amount of subjective evaluation was included. The smallest interval between tests was six months, the largest seven years, and the median was 1 to 2 years. When the changes between tests were tabulated by years of age, it was found that larger and more frequent changes occurred at the younger ages. When a divergence did occur, the chances were two to one in favor of improvement rather than deterioration. Between the third and fourth year, there were fewer and smaller changes, indicative of an increasing stability in the developmental quotient with age. However, conclusions from this study can only be suggestive, since it is highly probable that the developmental quotient conceals some of the extreme changes.

Leahy's[36] study of the mental development of 194 adopted children and a control group of 194 own children is practically a repetition of Burks' study under somewhat more carefully controlled conditions. These children were between 5 and 14 years of age at the time this study was made. Leahy found the distribution of ages, school grades, and IQ's of both the adoption and control groups to be substantially identical, except that

the IQ's of the adopted group were less variable. The data seems to offer little positive support for the assumption that the intelligence of the adopted children had been materially changed by placement in an adoption home.

Dawson(17) studied the mental development of 5 to 10 year old children residing in English slum areas. A slight increase was found in mean IQ for children moved into better living conditions and the correlation between Stanford IQ's after an interval of 12 to 18 months was .71. A control group of children remained in slum districts and when examined under similar conditions manifested no change in mean IQ, the correlation between the two tests being .80. The results of this study suggest that better living conditions had a slight but beneficial effect upon mental development.

Schott(46) studied the mental development of 74 children issuing from inferior homes. Intelligence tests were administered to these children just prior to placement and following a period in a foster or boarding home. Re-examinations were given because of problems of adjustment and consequently cases were selected for lack of success, rather than for success. The chronological age range at the time of the initial examination was from 18 months to 12 years; the median age being 3 years. The median IQ was 93.5 and on re-examination 99.3.

After an average length of residence in a foster home of about one year, the group shows a statistically reliable increase in IQ. Gains were larger and more numerous than losses, but two-thirds of the cases showed changes within the 5 point

probable error range. The average change was about the same as variabilities reported with reference to investigations unconcerned with environmental improvements and their effect upon retests. The results are larger than could be accounted for by practice effect and may be explained in terms of emotional difficulties at the time of the initial examination.

Wells and Arthur[66] found a loss in IQ of 6.7 points by 100 children of feeble-minded parents who remained at home, and a gain of 1.4 points by 100 children, also of feeble-minded parents who were placed in foster homes (not for adoption). The age of own children at first test was 6 years 7 months and at retest 12 years. The age of foster children at first test was 5 years 6 months and at retest 10 years 5 months. The mean IQ's on first test were 81.1 and 79.7. The higher the IQ of own children at first test, the greater was the mean loss in IQ. Children placed under 5 years of age made a gain of 8.2 points; those placed after that age lost 4.5 points.

Skodak[48] studied a group of 154 children, who were all under 6 months of age at the time of placement in foster homes (in majority of instances, potential adoptive homes). These children had experienced essentially none of the influences of their true-parents' homes. Their true-family background, as judged on the basis of information concerning the intelligence, occupation, education of the mothers, and the social status of the true-families, was inferior to that of the population in general. On the other hand, the foster homes were above the average of the population in education, occupational level and

socio-economic status.

When tested after an average interval of 21 months in the foster home, at a mean age of 2 years 7 months, the mean IQ of the group was 116, with a standard deviation of 13.6. Upon re-examination at a mean age of 4 years, the mean IQ was 111.5 with a standard deviation of 13.2. Comparisons between the first and last tests of the children in foster homes show a difference of 4.6 points between the means. The ratio of this difference to the standard deviation of the difference is 2.99, indicating that a difference in the same direction can be expected in 99 of 100 similar samples. The product-moment coefficient of correlation between the first and last tests was found to be .56 $\pm$ .04. This corresponds quite closely to correlations reported in other studies for this age and interval.

Skodak summarizes the results of this study as follows:

"The mental level of these foster children on first examination was above the average of the general population and above the level of expectation, judging from the data available for the true-parents. On re-examination, despite a small decrease in mean IQ, their mental level was still above the mean for the population as a whole and higher than would be expected from the level of the true-parents.

"At one year of age, differences in mental levels of the children on the basis of the occupational classifications of the foster parents are negligible, but at older ages they are marked. The children in homes in the three upper occupational classifications (professional; semi-professional, and managerial; skilled

trades) are consistently above the mean of the total group, while children in homes in the four lower occupational categories (farmers; semi-skilled; slightly skilled; day laborers) are consistently below the mean of the total group.

"The mental growth curve of the children placed in homes in the three upper occupational classifications is characterized by a slight drop from the level of the first year and a fluctuation about this point. The mental growth curve of the children in homes in the lower four occupational categories is characterized by a marked drop after the first year, to a level slightly above the mean of the general population by the age of four, and then a maintenance of that level to the end of the period covered by this study.

"Relationships between the children's mental development and the education of both true and foster parents expressed in terms of coefficients of correlation rose from zero order on first examination to values of .16 to .33 on last examination. All correlations were lower than those reported for children and parents in their own homes, but are comparable to those reported by other investigators for similar pairings of foster children and true and foster parents.

"A correlation of .49 was found between children's IQ and a measure of the home environment at the older pre-school ages.

"Children whose true fathers came from the lowest occupational classification, or whose true-family background was extremely poor with one parent known to be mentally defective, showed the same pattern of mental development as that of the

total group of foster children. Those children placed in foster homes superior to the average of the total group were above the total group in mean IQ throughout the period of the study, and those children placed in foster homes inferior to the average of the total group were inferior to the total group in mental development. All children placed in similar homes and examined at the same mean ages showed the same pattern of mental development regardless of true-family background.

"Selective placement occurred to some extent. This is shown by the .30 ± .07 between true - and foster-parent education, and by the somewhat higher mean true-father occupation of children placed in the higher type of foster homes, as compared to that of children placed in the lower type of foster homes. In certain analyses, however, selection did not play any considerable role.

"Although the final status of the child was found to be related to factors characterizing the foster parents, changes in IQ between examinations do not appear to be related to factors characterizing either true or foster parents. Children younger on first examination tended to experience greater changes than those older. In this group of children, those initially below 110 IQ tended to gain as a group, while those above 110 tended to lose as a group. Those initially most extreme, experienced the greatest changes."

Skodak[48] also studied the mental development of a group of 65 children residing in foster homes (largely potential adoptive homes), who were between the ages of 2 years and 5 years

6 months at the time of placement, the mean placement age being 3 years, 7.6 months. Upon initial examination, the mean chronological age was 3 years, 4.2 months, the mean IQ was 98.5, the standard deviation 14.0, and the median IQ 100.1. Upon re-examination at a mean age of 4 years 4.2 months, the mean IQ was 104.2, the standard deviation 15.2 and the median IQ 104.5. The product-moment correlation between the test results was +/- 61 +/- .05. The critical ratio of the difference between means is 2.27.

In summarizing this study the author concludes as follows:

"(1) There appears to be no relationship between the intelligence of the children and the objective measures of the level of true-parent ability. There was a slight tendency for children of better educated mothers to make somewhat better improvement in foster homes than children whose mothers were less well educated.

"(2) Children of the age group included in this study tend to be placed selectively on the basis of the child's initial mental level and the occupation of the foster father.

"(3) Children of these ages and initial mental levels, when removed from their own inferior homes gained markedly in foster homes. The gains continued over the period of study covering approximately two years of residence in the foster homes.

"(4) Children initially lowest in mental level gained most, while there was a tendency for children initially highest to remain at their initial level. Children placed in all occupational levels gained in mean IQ, but the least gains were made by children in farming homes. Age at placement within this range

was unrelated to amount of change in IQ following placement.

"(5) There appears to be a slight increase in stability of scores with cumulative residence after placement, in spite of the continued rise in mean IQ for the group as a whole.

"(6) Contrary to the evidence presented for children who remain in inferior homes, or who do not undergo marked improvements in environment, these children show an increase in gains and a reduction in losses with a corresponding increase in mean IQ with progressive changes to environments superior to those in which they were born and in which they spent their early lives."

B. Children in Institutions.

Studies of the mental development of children in orphanages or institutions for dependents are relatively few in number. Surveys of institutional populations made by Cobb,[12] Fernald,[23] Gordon,[27] Terman and Wagner,[56] Viteles[59] and Wile[67] indicate that such populations are mentally retarded as compared to normal populations. Beyond this fact, these studies contribute little of scientific value.

Schmitt[45] studied 100 orphanage children between the ages of 4 and 16. All children had come from an originally poor home environment. When the subjects were divided into groups each covering a range of 2 years chronological age, no significant difference was found in these groups, between the proportion of mental retardation of those who had been in the institutions longest, and of those who had been there the shortest. The author admits that the small number of cases prevents results from being con-

clusive, but believes that any "large influences" would nevertheless be revealed if present.

Jones and Carr-Saunders [31] studied the relation between intelligence and social status among orphan children in England. This group consisted of 700 to 800 children and youths from industrial schools and orphanages. They were classified by schools and seem to show a differential effect of environmental factors on different social classes. With length of residence, there was a tendency for differences to decrease; the average IQ of one class of children was seen to increase; and that of another class to decrease. Continued association apparently brought greater likenesses in mental ability.

Rogers, Durling and McBride [44] studied two groups of children to ascertain the effect upon the intelligence level of change from a poor home environment to that of well-managed institutions. The subjects were 64 girls ranging at the time of the initial examination from 4 to 14 years of age, the median C.A. being 8 years 9 months. A control group was selected from public schools superior in character as regards physical and educational conditions. The results of this study show no appreciable effect of environmental change upon the intelligence quotient. Such differences as were found, were attributed to accidental factors.

Lawrence, [34] in a study in England, found that the correlation between IQ and original social status of children who entered institutions after the age of three was .47, but for those entering it before three, it was .31. The mean IQ of children entering after 3 years of age and originating from the higher

social levels was 111; for the lower social levels it was 90. Children who entered the institution under 3 years of age from the higher social levels had a mean IQ of 109; from the lower levels 98. The results of this study suggest that at younger ages differentiation by social level is not as marked as at later ages and that a common environment can cause more nearly similar IQ's among younger than older children.

Lithauer and Klineberg[38] studied the mental development of 120 children in a Hebrew orphanage. These children were given an intelligence test shortly after reception from extremely poor homes and again after periods of residence in an institution, or in boarding or foster homes, all of which were superior to their own homes. Upon initial examination, the mean age was 6.5 years and the mean IQ 82. Two years later the mean IQ was 88. The interval between tests ranged from 3 to 57 months. When changes between tests were examined, the gains were found to be more numerous than losses. The study concludes (1) that improvement in environment has a favorable influence on mental development; (2) that environment operates more noticeably on the younger children and (3) that the limits of environmental influence have not been fully explored since the environment into which these children were placed was superior only in comparison with their pre-placement environment, rather than with that of the general population.

Skeels, Updegraff, Wellman and Williams[47] studied two matched groups of orphanage children of pre-school age over a three-year period. The experimental group attended the orphanage pre-school; the control group did not. Large decreases in IQ

were related to long periods of orphanage residence in the case of the control group who tested in the upper half of the group (80 IQ or above). Children of similar levels who attended the pre-school did not change substantially.

To test the effect of a relatively superior environment on the IQ's of children, Reymert and Hinton[41] surveyed the case histories of 100 children at the Mooseheart Institution. A sociological survey of the homes from which the subjects came indicates that the Mooseheart environment was definitely superior to that of most of the homes. "The age range of this group at entrance was from 3 to 14 years and the IQ range from 70 to 130. All subjects had been inmates for four years. Each child had been given a Stanford-Binet Intelligence Test at entrance and had been examined yearly with the same test.

"A comparison of the entrance-test scores of the whole group with those of each succeeding year showed no significant gain in IQ even after 4 years' stay in the environment. By dividing the subjects into age levels, it was found that children of 6 years and under, individually and collectively, showed a significant gain after one year's residence. Small but significant gains continued throughout the four years' testing period for this group. The other age groups - one including children from 7 to 9 years of age, and the other from 10 to 14 years showed no significant gain.

"By dividing the subjects according to IQ with one group ranging from 70 to 94 and the other from 95 to 130, it was found that change to the relatively superior environment of Mooseheart

did not cause a significant rise in IQ in children whose mental ability is above or below the normal limits."

The author concludes, "that if the removal of children from a relatively inferior to a relatively superior environment is to have an advantageous effect on their IQ's, such change should be made before they reach the age of 6 years, because, for children from school-entrance age on, the IQ remained constant over 5 annual examinations following upon a change to a relatively superior environment. The pre-school group which showed a significant gain in IQ had all had nursery and kindergarten training, whereas the older group had not been exposed to their influence. The rise in IQ of the pre-school group may be due to the fact, that the solution of certain test items depends upon specific information gradually acquired, in many instances, through the medium of pre-school attendance."

Crissey[14] studied changes in IQ of children in state orphanages. Children classified as borderline or moron tended to remain constant or to show slight gains, whereas normal and superior children showed consistent losses. When 16 normal and dull-normal individuals were transferred from an institution for the feeble-minded to the orphanages, their changes followed the pattern of changes of other orphanage subjects. Every transferred child with an IQ above 93 decreased and every child with an IQ below 85 gained. The mean change of the higher group was from 100.3 to 94.1; of the lower group from 81.3 to 88.4.

CHAPTER IV

CHILDREN IN FOSTER HOMES

1. Description of Children and "True" Home Environment.

A. Description of Children:

(1) Origin:

This group consists of 85 children of whom 29 were boys and 56 girls. At the time of this investigation, all were under the care of the Children's Service Association and under the immediate supervision of the Protestant Foster Home Centre. All had been placed in foster homes following a brief period spent in the Receiving Home pending placement arrangements.

(2) Race:

Three different races are represented, classification according to race being shown in the following table:

TABLE I.

Classification of Children According to Race

Race	Number	Percent
White	78	91.8
Yellow	1	1.2
Black	6	7.0
Total	85	100.0

(3) Legal Status:

Of the 85 children, 51 are known to be legitimate and 34 illegitimate. In 7 instances where the child was illegitimate, parents were living together. In practically all other instances, the putative father had disappeared prior to placement.

(4) Siblings:

Seventy-six percent of these children had one or more brothers or sisters. In the majority of instances, siblings were referred for placement at the same time as subjects.

B. Description of True Parents:

(1) Civil Status:

As is shown in TABLE 2, only 18.8% of parents were married and living together when the child was accepted for foster home care. Thus in 41.2% of the cases, legitimate children issued from homes broken by either death, or by the legal separation or desertion of either one or both parents. An analysis of this Table indicates that for the group as a whole, less than one-fifth of the children came from a traditional home environment, that is, from a home consisting of father and mother, and possibly brothers or sisters. Another point of interest arising from Table 2 is the fact that the maternal death rate was much higher than the paternal, for parents legally married.

TABLE II.

Civil Status of True Parents

Status	Number	Percent
Married	16	18.8
Unmarried	34	40.0
Separation or Desertion	14	16.5
Widow	2	2.4
Widower	15	17.6
Both Parents Dead	4	4.7
Total	85	100.0

(2) Chronological Age of True Parents:

In TABLE 3 is shown the chronological age distribution of 69 of the "true" mothers and 64 of the "true" fathers. Maternal chronological age ranged from 16 to 52 years, the mean being 33.0 years and the median 35 years. Paternal chronological age ranged from 21 to 64 years with the mean at 37.6 and the median at 37.5 years. The necessity for placement of this group of children in an environment other than that of the true parents, cannot, in general, be attributed to circumstances arising from the fact that their parents were extremely young, inexperienced, and on this account unable to cope with difficulties that arose in the home setting, since the mean age for both parents is well over 30 years. It is highly probable, however, that these children are

suffering the consequences of the depression years, for undoubtedly, the future of their parents was adversely affected by economic conditions during this period.

TABLE III.

Chronological Age of True Parents

Chronological Age	Frequency	
	Mothers	Fathers
60 - 64		3
55 - 59		1
50 - 54	2	3
45 - 49	5	10
40 - 44	7	13
35 - 39	21	4
30 - 34	5	13
25 - 29	17	14
20 - 24	9	3
15 - 19	3	-
Age not known	16	21
Total	85	85
Mean	33.0	37.6
Median	35.0	37.5

(3) Occupational Status:

Information was available concerning the occupational status of 59 of the "true" fathers and 48 of the "true" mothers.

TABLE IV.

Occupational Status of True Parents

Occupational Classification	True Mothers		True Fathers	
	No.	%	No.	%
Professional	0	0.0	3	5.0
Semi-professional and Managerial	0	0.0	2	3.0
Skilled	3	6.0	7	12.0
Semi-skilled	20	42.0	24	41.0
Slightly skilled	24	50.0	8	14.0
Day Laborer	1	2.0	15	25.0
Total	48	100.0	59	100.0

In Table 4 "true" parents are classified occupationally according to a scale devised by Goodenough and Anderson.[26] Fathers were represented in all occupational groups, the largest percentage falling in the semi-skilled category. Mothers were unrepresented in the two highest groups, the largest percentage being workers in slightly skilled occupations. 98% of the mothers were engaged in skilled, semi-skilled or slightly skilled occupations as compared with 67% of the fathers. 2% of the mothers fell in the lowest occupational grouping as compared with 25% of the fathers.

When rated according to the Minnesota Occupational Status Index,[35] the mean occupational rating of fathers is 3.4 and of the mothers 2.2.

(4) Economic Status:

Table 5 records the economic status of 72% of the true parents at the time their children were referred for care to the Children's Service Association. Classification of economic status is based on a scale devised by the Committee on Statistics of the American Psychiatric Association.(13) The income of 52% of the true parents may be described as "Marginal", that is the family existed on daily earnings but accumulated little or nothing; being on the margin between self-support and dependency. 38% were "Dependent", lacked the necessities of life and received aid from funds or persons outside the immediate family. 10% were "Comfortable", having accumulated resources to maintain their family for at least four months.

TABLE V.

Economic Status of True Parents

Classification	No.	%
Dependent	23	38
Marginal	32	52
Comfortable	6	10
Total	61	100

C. Description of True Home Environment:

No data were available concerning the home environment of 69% of the children. In 26 instances, brief descriptions were given in the case record. On the basis of this information, these homes are classified in Table 6.

Although data concerning the home environment are limited, other data contained in the case records suggest that the majority of children issued from homes in which the material surroundings were extremely poor. The home environment in many instances was also characterized by friction between parents, physical or mental illness, parental indifference or gross immorality.

TABLE VI.

Description of Home Environment

Description	No.
Material surroundings extremely poor.	9
Home over-crowded.	2
Home filthy and neglected.	8
Home fairly well cared for.	2
Home well cared for and material surroundings good.	5
Total	26

2. Description of Foster Home Environment.

A. Description of Foster Homes:

(1) Number of Foster Homes:

Ninety-five different homes provided foster home care for the subjects of this investigation and in all 115 placements were involved.

(2) Location of Foster Homes:

An analysis of Table 7 indicates that foster homes were distributed in all districts of Montreal proper as well as in some of the outlying districts. As can be seen from Table 7, an attempt is made by the Protestant Foster Home Centre to place children in non-crowded areas, and in areas as free from industry and traffic as possible. About 70% of the placements are in what Dawson[17] describes as "zones of artisan settlement", although in certain of these districts, a fairly large percentage of white-collar and semi-professional workers also reside.

Although according to statements made by foster mothers, financial gain is not in the majority of instances a factor motivating their willingness to provide foster home care, it is nevertheless probably an important consideration, since there are relatively few foster homes in the typical white-collar or better class areas.

TABLE VII.

Location of Foster Homes

Location	No. Homes
Annex	1
Bordeaux	1
Cartierville	1
Greenfield Park	1
Lachine	2
Maisonneuve	1
Montreal North	2
Montreal South	2
Northeastern Section of Montreal	10
Notre Dame de Grace	5
Outremont	3
Point St. Charles	6
Rosemount	7
St. Henry	5
St. Lambert	3
St. Laurent	2
Tetraultville	1
Verdun	22
Ville Emard	5
Ville LaSalle	8
Ville St. Pierre	1
Westmount	1
Rural Area	5
Total	95

(3) Reasons Underlying Offers to Provide Foster Home Care:

The majority of foster parents upon their initial contact with the Home Finder of the Protestant Foster Home Centre, failed to make known the reasons underlying their willingness to provide foster home care. The reasons given by 36 of the foster parents are listed in Table 8.

TABLE VIII.

Reasons Underlying Offers to Provide Foster Home Care

Reasons	No. Cases
1. Companionship for foster parents.	11
2. Companionship for "own" children.	10
3. Fond of children. (No young children in home).	7
4. Possible adoption.	3
5. Financial.	5
6. Social contribution.	3
7. No reason given.	56
Total	95

B. Description of Foster Parents:

(1) Parental Status:

69% of the foster parents were, themselves, parents, 26% had no parental status, and in the case of 5%, no data with reference to this question were available in the case records. In three instances, foster mothers were middle-aged, single women who retained homes of their own. In all but 5 of the 65 homes where foster parents were themselves, parents, "own" children were also residing in the home. The mean number of "own" children per foster family was 2.2 and their mean age 11.5 years.

(2) Chronological Age of Foster Parents:

The distribution of the chronological ages of 76 of the foster mothers and 61 of the foster fathers is shown in Table 9. Foster mothers ranged in age from 24 to 79 years,* the mean chronological age being 44 years, and the median 43.5 years. The chronological age range of foster fathers was from 24 to 64, the mean being 45 years and the median 42.

Compared with the "true" mothers, foster mothers were on the average approximately ten years older, whereas foster fathers were about 8 years older than "true" fathers.

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*Relative. Individuals of advanced age not usually accepted as foster parents.

TABLE IX.

Chronological Age of Foster Parents

Chronological Age	Number	
	Mothers	Fathers
75 - 79	1	0
70 - 74	0	0
65 - 69	0	0
60 - 64	6	8
55 - 59	3	3
50 - 54	5	9
45 - 49	14	9
40 - 44	24	14
35 - 39	11	10
30 - 34	4	6
25 - 29	7	2
20 - 24	1	0
Total	76	61
Mean	44.0	45.0
Median	43.0	42.0

(3) Occupational Status:

Data were available concerning the occupational status of 73 of the foster fathers and 36 of the foster mothers. In Table 10 these individuals are classified occupationally according to a scale devised by Goodenough and Anderson[26]. Foster mothers were represented in all but the lowest occupational clas-

sification, the majority falling in the skilled and semi-skilled groups. A comparison of the occupational status of foster mothers with that of the "true" mothers indicates that 81% of the foster mothers were represented in the slightly semi-skilled or skilled classifications, as compared with 92% of the "true" mothers. 36% of the foster mothers were distributed in the three highest occupational groups as compared with 6% of the "true" mothers.

Foster fathers were represented in all but the highest occupational group. The majority were distributed in the semi-skilled classification, this being also true in the case of the "true" fathers. 27% of the foster fathers fell in the three highest occupational categories, as compared with 20% of the true fathers.

The mean rating of foster mothers, according to the Minnesota Occupational Status, was 4.1 while that of the true mothers was 2.2. Foster fathers, according to this scale, rated 5.1, whereas true fathers rated 3.4.

TABLE X.

Occupational Status of Foster Parents

Occupational Classification	Foster Mothers		Foster Fathers	
	No.	%	No.	%
Professional	5	14.	0	
Semi-professional and Managerial	2	5.	4	5.
Skilled	6	17.	16	22.
Semi-skilled	13	36.	32	44.
Slightly skilled	10	28.	18	25.
Day laborer	0		3	4.
Total	36	100.0	73	100.0

(4) Economic Status:

Data with reference to monthly income were available for 44% of the foster families. This ranged from $40 to $225, the mean income being $87 and the median $90. When classified according to the Scale[13] utilized to describe the economic status of the true parents (see Table 5), the incomes of the majority of foster homes were only very slightly higher than "marginal", the majority of families existing on their daily earnings and accumulating only a very small amount from month to month. None of the foster parents may be classified as dependent and only a small percentage fell in the "comfortable" category.

C. Adjustment of Children in Foster Homes:

According to data contained in the case records, 81% of the children made a good adjustment in the foster home setting, 15% adjusted fairly well, and in 4% of the cases adjustment was poor.

75% of the foster mothers handled the children in an understanding, reasonable, objective manner, 21% handled them fairly well and 4% seemed to have very little understanding of their needs and adopted an unsatisfactory attitude towards them.

D. Characteristics of Placement.

(1) Reasons for Placement:

In Table 11 are listed the factors responsible for the placement of these children under the care of the Children's Service Association. Death or desertion of one or both parents, parental illness, poor living conditions and parental immorality were underlying causes in a large percentage of the placements.

TABLE XI.

Reasons for Placement of Children

Reasons	No. of Cases	%
Death of one or both parents.	16	19.0
Desertion of one or both parents.	27	32.0
Parental illness:		
(a) physical	6	7.0
(b) mental	6	7.0
Parent mentally deficient.	3	4.0
Imprisonment of mother.	2	2.0
Poor living conditions.	6	7.0
Incorrigibility of child.	1	1.0
Parental immorality.	8	9.0
Parental cruelty.	2	2.0
Parental neglect.	3	4.0
Parental incompatibility.	3	4.0
Parental separation.	2	2.0
Total	85	100.0

(2) Age of Children at Placement:

At placement the children ranged in chronological age from 2 years 3 months to 14 years 7 months, the mean placement age being 6.7 years.

(3) Length of Placement:

The placement periods varied in length from 7 months to 11 years 7 months, the mean length of placement being 3.6 years.

(4) Changes in Placement:

In Table 12 is shown the number of changes in placement which occurred during the interval between the pre-placement and post-placement examinations. 72% of the children experienced no change in placement, 21% experienced one change, 6% two changes and 1% three changes.

TABLE XII.

Changes in Placement

No. of Changes	No. of Cases	%
0	61	72.0
1	18	21.0
2	5	6.0
3	1	1.0
Total	85	100.0

E. The Mental Development of Foster Children.

All children were given two intelligence tests, one just prior to placement and one during the placement period. The Stanford-Binet and the Revised Stanford-Binet Intelligence

Scales were utilized for this purpose.

(1) Chronological Ages of Children at Time of Intelligence Tests:

The distribution of chronological ages at which these tests were given is shown in Table 13. The mean age at the time of the first examination was 5.9 years, the standard deviation 2.9 years and the median age 5.6 years. 34% of the children were under 5 years of age, 49% were between 5 and 10 years, and 17% 10 years or older.

Upon re-examination during the placement period, the mean age was 10.1 years, the standard deviation 3.3 years and the median age 11.0 years. At the time of this examination, 2% of the children were under 5 years of age, 57% were between 5 and 10 years and 41% were 10 years of age or older.

TABLE XIII.

Distribution of Chronological Ages at which Intelligence Tests were Administered

Chronological Age	Test	
	Pre-Placement	Post-Placement
16 yrs. 0 mos - 16 yrs. 11 mos.	0	3
15 " 0 " - 15 " 11 "	0	7
14 " 0 " - 14 " 11 "	1	7
13 " 0 " - 13 " 11 "	1	8
12 " 0 " - 12 " 11 "	3	7
11 " 0 " - 11 " 11 "	4	11
10 " 0 " - 10 "	5	4
9 " 0 " - 9 "	4	8
8 " 0 " - 8 "	4	4
7 " 0 " - 7 "	4	11
6 " 0 " - 6 "	10	9
5 " 0 " - 5 "	20	4
4 " 0 " - 4 "	9	1
3 " 0 " - 3 "	15	1
2 " 0 " - 2 "	5	0
Total	85	85
Mean	5.9 years	10.1 years
Standard Deviation	2.9 years	3.3 years
Median	5.6 years	11.0 years

(2) Results of Pre-Placement and Post-Placement Examinations:

In Table 14 are tabulated the results of the Pre-Placement and Post-Placement intelligence tests. The mean IQ of the Pre-Placement test was 88.5, the standard deviation 13.4 and the median IQ 87.7. Upon re-examination, the mean IQ was 88.8, the standard deviation 11.9 and the median IQ 90.3. Upon initial examination, 58% of the children were somewhat retarded from the standpoint of general intelligence, whereas upon re-examination 47% of the children fell into this category. In Figure 1 the distribution of Pre-Placement and Post-Placement IQ's is compared with the distribution of IQ as found in the general population by Terman[55] in 1936. Comparison of the Pre-Placement and Post-Placement curves of IQ distribution for the foster home group shows an apparently significant shift of the maximum from the interval 80 to 89 to 90 to 99 for the group as a whole.

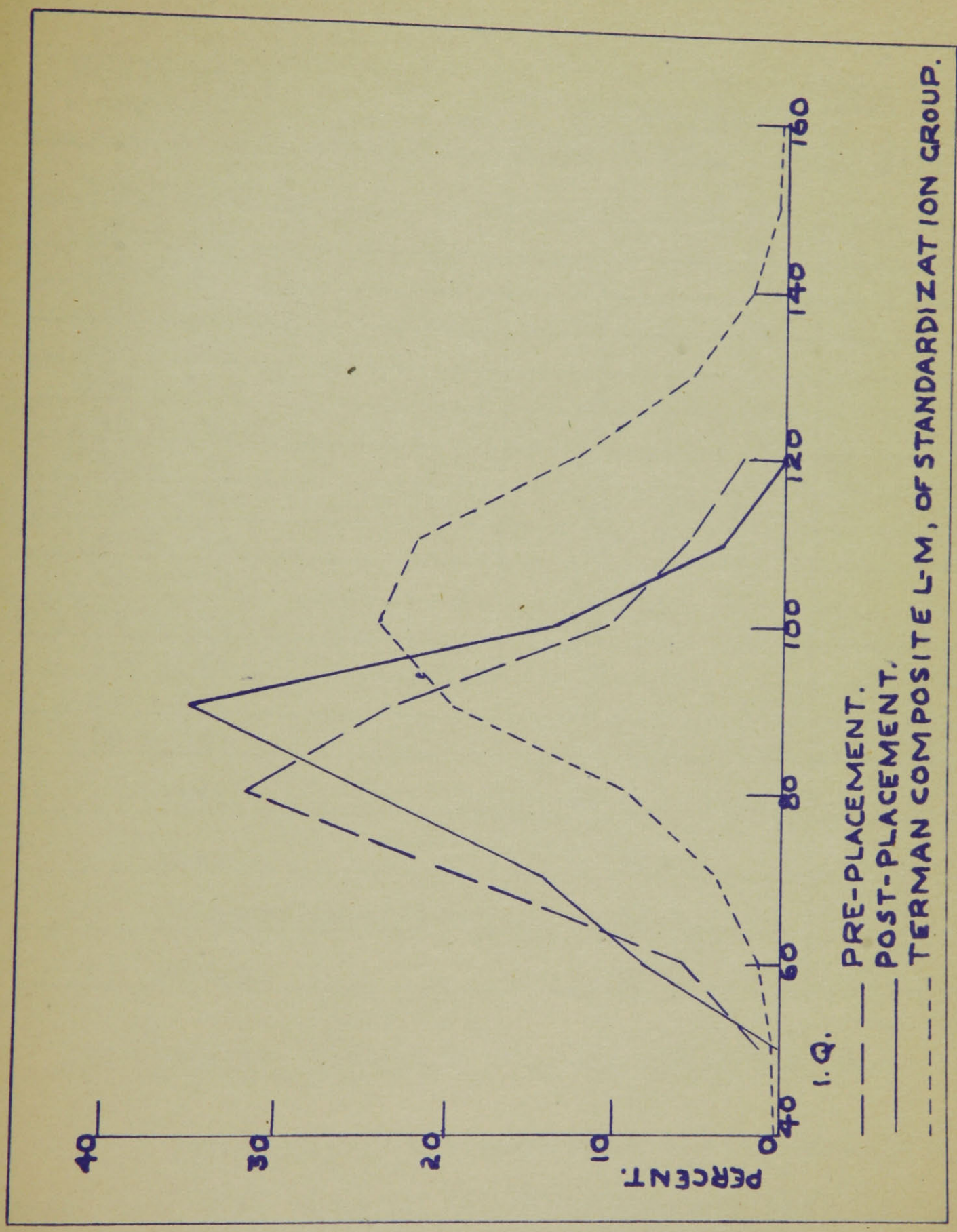

FIG. 1. DISTRIBUTION OF I. Q.'S IN FOSTER HOME GROUP.

TABLE XIV.

Distribution of Intelligence Quotients

Intelligence Quotient	Test			
	Pre-Placement		Post-Placement	
	No. Cases	%	No. Cases	%
125 - 129	0	0.0	0	0.0
120 - 124	2	2.4	0	0.0
115 - 119	0	0.0	2	2.4
110 - 114	5	5.9	1	1.2
105 - 109	5	5.9	2	2.4
100 - 104	4	4.7	10	11.8
95 - 99	8	9.4	15	17.6
90 - 94	12	14.1	15	17.6
85 - 89	18	21.2	8	9.4
80 - 84	9	10.6	13	15.3
75 - 79	12	14.1	8	9.4
70 - 74	4	4.7	4	4.7
65 - 69	2	2.4	6	7.0
60 - 64	3	3.5	1	1.2
55 - 59	1	1.2	0	0.0
Total	85	100.0	85	100.0
Mean	88.5		88.8	
Standard Deviation	13.4		11.9	
Median	87.7		90.3	

(3) Relation between Intelligence Test Results:

A comparison of the results of the Pre-Placement intelligence test with those of the Post-Placement test indicates a difference of 0.3 between mean IQ's. The critical ratio of the difference between mean IQ before placement and mean IQ after a period in a foster home environment is 0.32 and is indicative of

no significant increase in intelligence level. Inspection of Table 14 indicates the presence of a certain amount of regression, there being a tendency for children originally having the highest IQ's to move into classifications nearer the mean of the group, and for children at the lowest levels to progress into a slightly higher classification upon re-examination. This is in agreement with the findings of Wellman[61] and Crissey[14] that children initially at the extremes of a population on retests tend to approach the mean of the population as a whole.

The product-moment coefficient of correlation between Pre-Placement and Post-Placement Intelligence Tests is $+.77 \pm .03$. This correlation is in fairly close agreement with reported correlations between tests and retests of school-age children who have been exposed to a constant environment. Studies by Freeman,[24] Dawson[18] and Schott[46] to determine the effect of a marked change in environment upon the general intelligence level of a group of children of similar age to the group included in this study report a more substantial increase in IQ following a period of placement, than occurred between the Pre-Placement and Post-Placement Intelligence Tests of the present investigation.

(4) Relation between Intelligence of Children and Occupational Status of "True" Fathers:

As has already been stated elsewhere in this chapter, the occupational status of the true fathers was rated according to the Minnesota Occupational Status Index. The relationship be-

tween the Pre-Placement IQ's and the occupational status of the "true" fathers is practically of zero-order. The coefficient of correlation between these two variables being -.06 ± .09.

(5) Relationship between Intelligence of Children and Occupational Status of the Foster Fathers:

The occupational status of the foster fathers was evaluated by the same method as was utilized to rate the occupational status of the "true" fathers. However, in certain instances, children were exposed to more than one foster home environment and under such circumstances, values were allotted to each foster father occupation in proportion to the length of time spent in the foster home under consideration. The mean of these values was then determined for each case and the result utilized as a general index of occupational status for foster homes utilized throughout the placement period for a given child. The correlation between Post-Placement IQ's and the occupational status of foster fathers is practically of zero-order, the coefficient of correlation being -.06 ± .08. This is identical with that between the occupational status of the "true" fathers and Pre-Placement IQ's.

(6) Changes in IQ between Pre-Placement and Post-Placement Examination:

TABLE XV.

Changes in Intelligence Quotients

Difference in IQ between Pre-Placement and Post-Placement Examination	No. of Cases	%
Gains: 21 to 25 points	0	0
16 to 20 points	5	5.9
11 to 15 points	10	11.8
6 to 10 points	10	11.8
1 to 5 points	13	15.2
No Change	6	7.0
Losses: 1 to 5 points	25	29.4
6 to 10 points	10	11.8
11 to 15 points	4	4.7
16 to 20 points	1	1.2
21 to 25 points	1	1.2

Distribution of the changes in IQ between the Pre-Placement and Post-Placement Examinations is shown in Table 15. 51.6% of the IQ's changed within the limits of ± 5 points; 29.5% gained between 6 and 18 points and 18.9% lost between 6 and 22 points.

(7) Relation between Chronological Age on Initial Test and Change in IQ:

TABLE XVI.

Relation Between Chronological Age on Initial Test and Change in IQ

Age in Years	No. of Cases	Mean IQ of Children Examined at these Ages	Range of IQ Changes	Mean IQ Change	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
2-3	20	94.3	+17 to -22	+2.9	9.38	2.10	1.38
4-5	29	84.2	+18 to -15	+1.6	9.08	1.69	0.95
6-7	14	89.9	+15 to -10	+1.5	7.38	1.97	0.76
8-9	8	89.9	+7 to -17	- 4.4	7.10	2.51	1.75
10-11	9	85.2	+8 to -15	- 3.1	6.34	2.11	1.47
12-13 -14	5	87.2	+10 to -5	+0.4	5.20	2.33	1.72

According to Table 16 the greatest changes in IQ occurred among children who were 8 or 9 years of age at the time of the Pre-Placement Test and least changes occurred among the 12, 13 and 14 year old group. The change at the 8 and 9 year old level represented a decrease in IQ, whereas that at the 12, 13 and 14 year old level represented a gain in IQ. The standard deviation of the distribution of changes shows a tendency to decrease with

age and suggests a tendency towards a reduction in the extent of changes with increase in age. In general, there is no significant relationship between amount of change in IQ and age at first examination.

(8) Length of Interval between Intelligence Tests and Changes in IQ:

Since the interval between the Pre-Placement and Post-Placement intelligence tests is practically identical with length of placement, no investigation was made of the relation between the interval between tests and change in IQ.

(9) Relation between the Pre-Placement IQ and Changes in IQ between Examinations:

Changes in IQ as related to Pre-Placement IQ are shown in Table 17. The least change in intelligence level occurred in the IQ grouping 90 to 99. Mean changes were larger in each of the three IQ classifications above 99 than in those below 99. Losses occur at 90 IQ and increase in size until the 120 - 129 level is reached. In none of the IQ categories are differences between means of actual significance statistically, although those of the three upper categories approach statistical significance. However, it must be kept in mind that the number of cases in each of these classifications is small and as a result the standard error of the means are under-estimated, the standard error of the difference too small and consequently the critical ratio too large. For the group, as a whole, the difference between the mean Pre-Placement IQ and the mean Post-Placement IQ

is statistically insignificant, the critical ratio being 0.32.

TABLE XVII.

Relation Between Pre-Placement IQ and Changes in IQ Between Examinations

Pre-Placement IQ	No. Cases	Range of Change in IQ	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
120-129	2	-7 to -22	-14.5	7.50	5.30	2.74
110-119	5	+/- 4 to -15	- 7.0	6.26	2.80	2.50
100-109	9	+/- 11 to -12	- 4.7	6.54	2.18	2.16
90-99	20	+/- 11 to -8	- 0.3	4.81	1.08	0.28
80-89	27	+/- 17 to -17	+/-2.8	9.22	1.77	1.58
70-79	16	+/- 17 to -10	+/-4.0	7.69	1.92	2.08
60-69	5	+/- 14 to -4	+/-3.8	6.20	2.77	1.37
50-59	1	+/- 18	-	-	-	-

(10) Relation between Age and IQ on the Pre-Placement Examination:

In Table 18 chronological ages and Pre-Placement IQ's are compared in order to check on the possibility that the oldest children were the ones who were lower in IQ and showed the least change, and also to show the reverse for the youngest. In

general, differences between groups are not consistent in direction and the relationship between C.A. and IQ is no higher than is usually found between these two variables.

TABLE XVIII.

Relation Between Chronological Age and IQ on Initial Examination

Initial IQ	Number	Mean Age	Range	Standard Deviation Months
120-129	2	2 yrs. 11 mos.	2 yrs. 6 mos. to 3 yrs. 4 mos.	5.00
110-119	5	7 yrs. 1 mo.	2 yrs. 5 mos. to 11 yrs. 9 mos.	38.68
100-109	9	5 yrs. 1 mo.	2 yrs. 10 mos. to 8 yrs. 4 mos.	19.10
90-99	20	6 yrs. 5 mos.	2 yrs. 8 mos. to 12 yrs. 3 mos.	36.87
80-89	27	7 yrs. 0 mos.	3 yrs. 5 mos. to 14 yrs. 4 mos.	38.47
70-79	16	5 yrs. 10 mos.	3 yrs. 0 mos. to 10 yrs. 9 mos.	27.99
60-69	5	6 yrs. 8 mos.	5 yrs. 3 mos. to 11 yrs. 2 mos.	27.52
50-59	1	5 yrs. 5 mos.	5 yrs.5 mos.	-

(11) Relation Between Changes in IQ to Length of Placement:

In Table 19 is shown the relation between changes in IQ and length of placement. From this table it can be readily seen that there is very little relationship between IQ change and length of placement in a foster home environment, the product-moment coefficient of correlation between these two variables being $\pm$ .07 $\pm$ .07. The greatest change in IQ points occurred among children exposed to a foster home environment for a period of 4 to 5 years. This change represented a gain in IQ but the amount of change which did occur for this placement period is statistically of little significance.

TABLE XIX.

Relation of Changes in IQ to Length of Placement

Length of Placement	No. of Cases	Range of IQ Changes	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
Less than 12 mos.	4	± 8 to -5	-0.5	5.02	2.51	0.20
1 yr. to 1 yr. 11 mos.	22	± 15 to -10	±1.3	6.38	1.36	0.96
2 yrs. to 2 yrs. 11 mos.	18	± 18 to -15	±1.6	9.46	2.22	0.72
3 yrs. to 3 yrs. 11 mos.	5	± 12 to -4	±2.2	6.01	2.68	0.82
4 yrs. to 4 yrs. 11 mos.	12	± 17 to -17	±2.4	10.91	3.14	0.76
5 yrs. to 5 yrs. 11 mos.	14	± 17 to -22	-2.0	9.80	2.61	0.76
6 yrs. to 6 yrs. 11 mos.	3	± 17 to -10	±0.7	11.73	6.77	1.03
7 yrs. to 7 yrs. 11 mos.	1	0	-	-	-	-
8 yrs. to 8 yrs. 11 mos.	3	± 1 to -3	-1.0	1.63	0.94	1.06
9 yrs. to 9 yrs. 11 mos.	1	-11	-	-	-	-
10 yrs. to 10 yrs. 11 mos.	1	-5	-	-	-	-
11 yrs. to 11 yrs. 11 mos.	1	± 5	-	-	-	-

(12) Relation Between Changes in IQ to the Number of Changes in Placement:

In Table 20 is shown the relation between changes in IQ and the number of changes in foster homes throughout the placement period. The greatest change in IQ occurred among children who had experienced one or two changes in foster home environment, whereas the least change occurred in the group exposed to a constant environment throughout the placement period. All changes represented gains in IQ. For all three groups, the amount of change in mean IQ is statistically insignificant. However, it must be kept in mind that each of these groups includes individuals who were of different ages and who had been exposed to one or more foster home environments for varying periods of time. Consequently, the comparisons made in Table 20 must be regarded as extremely broad and merely suggestive. Owing to the small number of children in groups two and three, procedures leading to more refined comparisons do not appear to be warranted.

TABLE XX.

Relation Between Changes in IQ to Number of Changes in Placement

No. of Changes in Foster Home	No. of Cases	Range of IQ Changes	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
0	61	+/- 17 to -22	0.2	8.28	1.06	0.19
1	18	+/- 18 to -17	1.8	10.66	2.51	0.72
2	5	+/- 12 to -5	0.6	5.95	2.66	0.23
3	1	+/- 6	-	-	-	-

(13) Changes in IQ and Occupation of Foster Father:

The IQ's of children placed in foster homes where the foster father was engaged in professional, semi-professional or managerial occupations, increased to a somewhat greater extent than did the IQ's of children residing in foster homes where the foster father was engaged in skilled, semi-skilled, slightly skilled or laborer occupations. The mean gain in IQ of children residing in foster homes where foster fathers were employed in slightly skilled and laborer occupations was slightly greater than that of children residing in homes where foster fathers were engaged in skilled and semi-skilled types of work. However,

the actual mean change in IQ which occurred in any of the occupational groups is of little significance statistically.

TABLE XXI.

Changes in IQ and Occupation of Foster Father

Occupation of Foster Father	No. of Cases	IQ at Placement			Changes in IQ Between Placement			Standard Error of Differences Between Mean IQ's	Critical Ratio
		Mean	Standard Deviation	Median	Mean Changes in IQ	Standard Deviation of IQ Differences	Median		
Professional. Semi-professional and Managerial.	8	91.7	9.43	87.5	+5.0	7.26	4.5	2.56	1.95
Skilled Trades. Semi-skilled.	43	87.0	15.06	86.0	+0.1	8.51	1.0	1.29	0.07
Slightly skilled. Laborer.	27	90.2	11.36	91.0	+0.4	8.85	0.0	1.70	0.23

S U M M A R Y:

1. In this chapter is shown the relationship between the mental development of 85 children who came from an inferior "true" home environment and who were placed in an environment superior to that to which they had been accustomed, and of various factors characterizing the "true" home environment, the foster home environment, the placement period and the children themselves.

2. These children at placement ranged in age from 2 years 3 months to 14 years 7 months, the mean placement age being 6.7 years.

60% were legitimate. Less than 20% of the children issued from a traditional home environment, that is, from a home, consisting of father and mother, and possibly brothers and sisters.

The mean chronological age of the "true" mothers was 33 years, that of the "true" fathers 37.6 years. The majority of the "true" fathers and the "true" mothers were skilled, semi-skilled or slightly skilled workers, although all were not actually employed at the time of their child's placement in a foster home. The mean occupational rating of the "true" fathers was 3.4, that of the mothers 2.2. The income of 52% of the "true" parents was "marginal", 10% were "comfortable" and 38% of the parents were "dependent" and received aid from sources outside the family.

Available data suggest that the majority of the children issued from home environments in which the material surroundings were extremely poor and which, in many instances, were charac-

terized by factors not at all conducive to healthy mental and physical development. Death, or desertion of one or both parents, parental illness, poor living conditions and parental immorality were factors making placement essential in a large percentage of the cases.

3. The majority of foster homes were situated in fairly open districts, free from industry and heavy traffic. 69% of the foster parents were, themselves, parents and in all but five of these instances, "own" children were also residing in the home.

The mean chronological age of foster mothers was 44 years, that of foster fathers 45 years. The majority of foster mothers had been, prior to marriage, skilled, semi-skilled or slightly skilled workers. The majority of foster fathers were employed in skilled, semi-skilled, or slightly skilled types of work. The mean occupational rating of foster mothers was 4.1, that of foster fathers 5.1. The economic status of the majority of foster homes was "marginal" and none fell in the "dependent" category.

Placement periods varied in length from 7 months to 11 years 7 months, the mean length of placement being 3.6 years. 72% of the children were in a constant environment throughout the placement period.

The majority of the children made a good adjustment in their foster homes and for the most part, foster parents assumed a sympathetic, reasonable attitude towards them.

On the basis of available data, one may conclude that the material and psychological attributes of the foster homes were

definitely superior to those of the "true" home environment. Thus placement involved transition to an environment superior to that of the "true" home.

4. At the time of the Pre-Placement Intelligence Test, the mean chronological age of this group of children was 5.9 years, the standard deviation 2.9 years, and the median age 5.6 years. Upon re-examination, the mean age was 10.1 years, the standard deviation 3.3 years and the median 11 years.

5. The mean IQ of the Pre-Placement Intelligence Test was 88.5, the standard deviation 13.4, the median IQ 87.7. Upon re-examination, the mean IQ was 88.8, the standard deviation 11.9 and the median IQ 90.3. Both upon initial examination and upon re-examination, the mean IQ of this group of children was below the average of the general population. Upon re-examination, children originally having the highest IQ's tended to move into classifications nearer the mean of the group, whereas children at the lowest levels tend to progress into slightly higher classifications.

6. The critical ratio of the difference between mean IQ before placement and mean IQ following a period in a foster home is 0.32 and is indicative of no significant increase in intelligence level. The product-moment coefficient of correlation between Pre-Placement and Post-Placement intelligence tests is $+.77 \pm .03$.

7. The relation between the intelligence of children upon initial examination and the occupational status of the "true" fathers is practically of zero order, the coefficient of correlation being -.06 ± .09.

8. The relation between the intelligence of children upon re-examination and the occupational status of the foster fathers is practically of zero order, the coefficient of correlation being -.06 ± .08.

9. Upon re-examination, 51.6% of the IQ's changed within the limits of ± 5 points; 29.5% gained between 6 and 18 points and 18.9% lost between 6 and 22 points.

10. In general, there is no significant relationship between amount of IQ change and chronological age at the time of the Pre-Placement examination. The standard deviation of the distribution of changes shows a tendency to decrease with age and suggests a tendency towards a reduction in the extent of changes with increase in age.

11. The least change in intelligence level occurred in the IQ grouping 90 - 99. Mean changes were larger in each of the three IQ classifications above 99 than in those below 99. Losses in IQ occur at 90 IQ and increase in size until the 120 - 129 level is reached. In none of the IQ categories are differences between means of significance statistically.

12. There is very little relationship between IQ change and length of placement in a foster home environment, the product-moment coefficient of correlation being $\pm$ .07 $\pm$ .07.

13. Practically no relationship exists between changes in IQ and the number of changes in placement.

14. Relationship between age and IQ is no higher in this study than is usually found between these two variables.

15. The IQ's of children placed in foster homes where the foster father belonged to the professional, semi-professional and managerial occupational groups increased to a somewhat greater extent than did the IQ's of children residing in foster homes where the foster father belonged to the skilled, semi-skilled, slightly skilled, or laborer occupational classifications. The actual mean change in IQ which occurred in any of the occupational groups is of little significance statistically.

CHAPTER V.

CHILDREN IN INSTITUTIONS

1. Description of Children and "True" Home Environment:

A. Description of Children:

(1) Origin:

This group consists of 80 children of whom 43 were boys and 37 girls. At the time of the present investigation all were under the care of the Children's Service Association, and were residents of either the Ladies' Benevolent Society Home, or the Montreal Protestant Orphans' Home.

(2) Legal Status:

19% of the children were illegitimate. In two instances, where the child was illegitimate, parents were living together. In all other instances, the putative father had disappeared prior to placement.

(3) Siblings:

84% of the children had one or more brothers or sisters and in the majority of instances, siblings were referred for placement at the same time as the subjects of this study.

B. Description of "True" Parents:

(1) Civil Status:

In Table 22 is shown the civil status of parents at the time children were accepted for care by the Children's Service

Association. 27% of the parents were married and living together as compared to 18% of the "true" parents of children residing in foster homes. As was the case for the group of foster children, under consideration in the previous chapter, between 40 and 50% of the legitimate children issued from homes disrupted by death, or by the separation of either one or both parents. Another point of similarity between these two groups is the fact that the maternal death rate was higher than the paternal for parents legally married.

TABLE XXII.

Civil Status of Parents

Civil Status	No. Cases	%
Unmarried	15	19.0
Married	22	27.0
Separated	4	5.0
Widow	18	23.0
Widower	21	26.0
Total	80	100.0

(2) Chronological Age of Parents:

In Table 23 is shown the chronological age distribution of 59 of the mothers and 68 of the fathers. Maternal chronological age ranged from 23 years to 50 years, the mean age being 32.9 years and the median 32 years. Paternal chronological age ranged

from 27 to 58 years, the mean age being 37.5 years and the median 37.0 years. The mean chronological age of both the fathers and mothers of this group of children is practically identical with the mean chronological age of "true" fathers and mothers of children residing in foster homes.

TABLE XXIII.

Chronological Age of True Parents

Chronological Age	Frequency	
	Mothers	Fathers
55 - 59	0	2
50 - 54	1	1
45 - 49	0	5
40 - 44	7	18
35 - 39	13	21
30 - 34	19	13
25 - 29	17	8
20 - 24	2	0
Age not recorded	21	12
Total	80	80
Mean	32.9	37.5
Median	32.0	37.0

(3) Occupational Status:

Information was available concerning the occupational status of 34 of the mothers and 62 of the fathers. In Table 24 parents are classified occupationally according to a scale devised by Goodenough and Anderson.(26)

TABLE XXIV.

Occupational Status of Parents

Occupational Classification	Mothers		Fathers	
	No.	%	No.	%
1. Professional	0	0.0	0	0.0
2. Semi-professional and Managerial	0	0.0	1	2.0
3. Skilled Trades	5	15.0	11	18.0
4. Farmers	0	0.0	0	0.0
5. Semi-skilled	8	23.0	26	42.0
6. Slightly skilled	19	56.0	12	19.0
7. Laborers	2	6.0	12	19.0
Total	34	100.0	62	100.0

Fathers were represented in all but the professional category, the largest percentage falling in the semi-skilled classification. Mothers were unrepresented in the professional and semi-professional and managerial classifications, the largest percentage falling in the slightly skilled category. 6% of the mothers were in the lowest occupational group as compared with 19% of the fathers.

Comparison of the occupational status of the fathers of the group of children under consideration in this chapter with the occupational status of the "true" fathers of the foster children indicates (1) that the fathers of children in the institutional group were unrepresented in the professional category, whereas the "true" fathers of the foster children were distri-

buted in all occupational categories; (2) that 79% of the fathers of children in the institutional group were engaged in either skilled, semi-skilled or slightly skilled types of work, whereas 91% of the fathers of foster children were thus employed and (3) that the percentage of fathers of children in the institutional group employed as laborers, was smaller than the percentage of fathers of foster children engaged in this type of work.

Mothers of children residing in institutions were unrepresented in the professional and semi-professional and managerial categories as were the "true" mothers of children residing in foster homes. 94% of the mothers of the institutional group were classified occupationally as skilled, semi-skilled, or slightly skilled workers as compared with 98% of the "true" mothers of foster children.

When rated according to the Minnesota Occupational Status Index[35] the mean occupational rating of fathers of children residing in institutions was 3.3, that of the mothers 2.9. These ratings are in close agreement with the occupational ratings of the "true" mothers and fathers of the group of children residing in foster homes.

(4) Economic Status:

In Table 25 is shown the economic status of 62% of the parents at the time their children were accepted for care by the Children's Service Association. Classification of economic status is based on a scale devised by the Committee on Statistics of

the American Psychiatric Association.(13) The income of 78% of the parents was "Marginal", that is the family existed on daily earnings, but accumulated little or nothing, being on the margin between self-support and dependency. 22% were "Dependent" and lacked the necessities of life and received aid from friends, relatives, social agencies or public funds. A comparison of the economic status of parents of children residing in institutions with that of the "true" parents of children residing in foster homes indicates that, in general, the economic status of parents of the institutional group was slightly better than that of parents of children in the foster home group.

TABLE XXV.

Economic Status of Parents

Classification	No.	%
Dependent	11	22.0
Marginal	39	78.0
Comfortable	0	0.0
Total	50	100.0

(5) Description of Home Environment:

Data concerning the home environment of this group of children were available in 54% of the cases. On the basis of this data, homes are classified in Table 26. Classifications are broad because of the rather sketchy data supplied in the case records.

As was the case for the group of children residing in foster homes, the majority of the children under present consideration, issued from homes where the material surroundings were extremely poor. In many instances also, the home environment was characterized by friction between parents, parental indifference, gross immorality, or physical or mental illness.

TABLE XXVI.

Description of Home Environment

Description	No.
Material surroundings extremely poor.	23
Home over-crowded.	0
Home filthy and neglected.	5
Home fairly well cared for.	12
Home well cared for and material surroundings good.	3
Total	43

II. Characteristics of Placement:

(1) Reasons for Placement of Children:

In Table 27 are listed the factors responsible for the placement of these children under the care of the Children's Service Association. Death or desertion of one or both parents, parental illness, poor living conditions, parental immorality and parental separation were factors underlying placement in a large percentage of the cases.

Comparison of the reasons underlying placement of this group of children with those underlying placement of the foster home group (Table 11), indicates that desertion was responsible for 26% of the institutional placements and 32% of the foster home placements. Death was a causal factor in 27% of the institutional placements as compared with 19% of the foster home placements. Parental illness made placement essential in 10% of the institutional placements and in 14% of the foster home placements. In general, reasons underlying placement were similar for both groups and cases followed practically the same order of distribution.

TABLE XXVII.

Reasons for Placement of Children

Reasons	No. of Cases	%
Death of one or both parents.	22	27.3
Desertion of one or both parents.	21	26.3
Parental illness: (a) physical (b) mental	 2 6	 2.5 7.5
Imprisonment of father; mother unable to provide adequate care.	3	3.8
Poor living conditions.	6	7.5
Incorrigibility of child.	5	6.3
Parental immorality.	6	7.5
Parental neglect.	3	3.8
Parental separation.	6	7.5
Total	80	100.0

(2) Criteria Underlying Selection of Institutional Placement:

Regardless of the type of physical care provided in institutions, or the facilities available therein to promote healthy mental development, child welfare authorities agree that foster home placement, rather than institutional placement, is advisable whenever possible. This conclusion is based on the fact that the foster home environment approximates more closely the type of environment into which the majority of individuals are

born, in which they mature and in which they spend the greater part of their lives. Consequently, children accepted for care by the Children's Service Association are, when conditions permit, usually placed in foster homes. Selection of institutional placement for the group of children under present consideration was based on one or a combination of the following factors:

1. Age of child.
2. Psychiatrist's recommendation that child be placed in a group setting.
3. To avoid the separation of siblings, this frequently being necessary when children are placed in foster homes.
4. Parents' request for institutional care.

(3) Length of Placement:

The placement periods of these children varied in length from 3 months to 6 years 5 months, the mean length of placement being 2.3 years. This is 1.3 years less than the mean length of placement for children of the foster home group. No changes in placement were made for any of the children throughout the placement period.

(4) Age of Children at Placement:

At placement, children ranged in chronological age from 2 years 10 months to 15 years 10 months, the mean C.A. being 8.2 years.

III. The Mental Development of Children in Institutions:

All children were given two intelligence tests, one just prior to placement and one during the placement period. The Stanford-Binet and Revised Stanford-Binet Intelligence Scales were utilized for this purpose.

(1) Chronological Ages of Children at Time of Intelligence Tests:

The distribution of chronological ages at which intelligence tests were given is shown in Table 28. Upon initial examination, children ranged in age from 3 years 2 months to 12 years 10 months, the mean age being 8.1 years, the standard deviation 2.2 years and the median 8.0 years.

9% of the children were under 5 years of age, 77% were between 5 and 10 years of age and 14% were 10 years or older.

Upon re-examination during the placement period, chronological age ranged from 5 years 10 months to 17 years 1 month, the mean age being 10 years, the standard deviation 2.5 years and the median 10 years.

48% of the children were between 5 and 10 years of age and 52%, 10 years or older.

As a group, these children were, upon initial examination, about 2 years older than the foster home group, whereas upon re-examination, the mean ages were practically identical.

TABLE XXVIII.

Distribution of Chronological Ages at which Intelligence Tests were Administered

Chronological Age	Test	
	Pre-Placement	Post-Placement
17 yrs. 0 mos. - 17 yrs. 11 mos.	0	1
16 " 0 " - 16 " 11 "	0	1
15 " 0 " - 15 " 11 "	0	2
14 " 0 " - 14 " 11 "	0	3
13 " 0 " - 13 " 11 "	0	2
12 " 0 " - 12 " 11 "	3	2
11 " 0 " - 11 " 11 "	2	17
10 " 0 " - 10 " 11 "	6	14
9 " 0 " - 9 " 11 "	9	11
8 " 0 " - 8 " 11 "	12	9
7 " 0 " - 7 " 11 "	11	9
6 " 0 " - 6 " 11 "	16	7
5 " 0 " - 5 " 11 "	14	2
4 " 0 " - 4 " 11 "	6	
3 " 0 " - 3 " 11 "	1	
Total	80	80
Mean	8.1 years	10.0 years
Standard Deviation	2.2 years	2.5 years
Median	8.0 years	10.0 years

(2) Results of Pre-Placement and Post-Placement Intelligence Tests:

In Table 29 are shown the results of the Pre-Placement and Post-Placement intelligence tests. The mean IQ of the Pre-Placement test was 87.1, the standard deviation 12.2 and the median IQ 87.0. Upon re-examination, the mean IQ was 88.7, the standard deviation 12.9 and the median IQ 88.0. In Figure 2, the distribution of Pre-Placement and Post-Placement IQ's is compared with the distribution of IQ as found in the general population by Terman[55] in 1936. Upon initial examination 59% of the children were somewhat retarded from the standpoint of mental development, whereas upon re-examination 45% fell in this category. These percentages are almost identical with the percentage of foster children falling in similar categories.

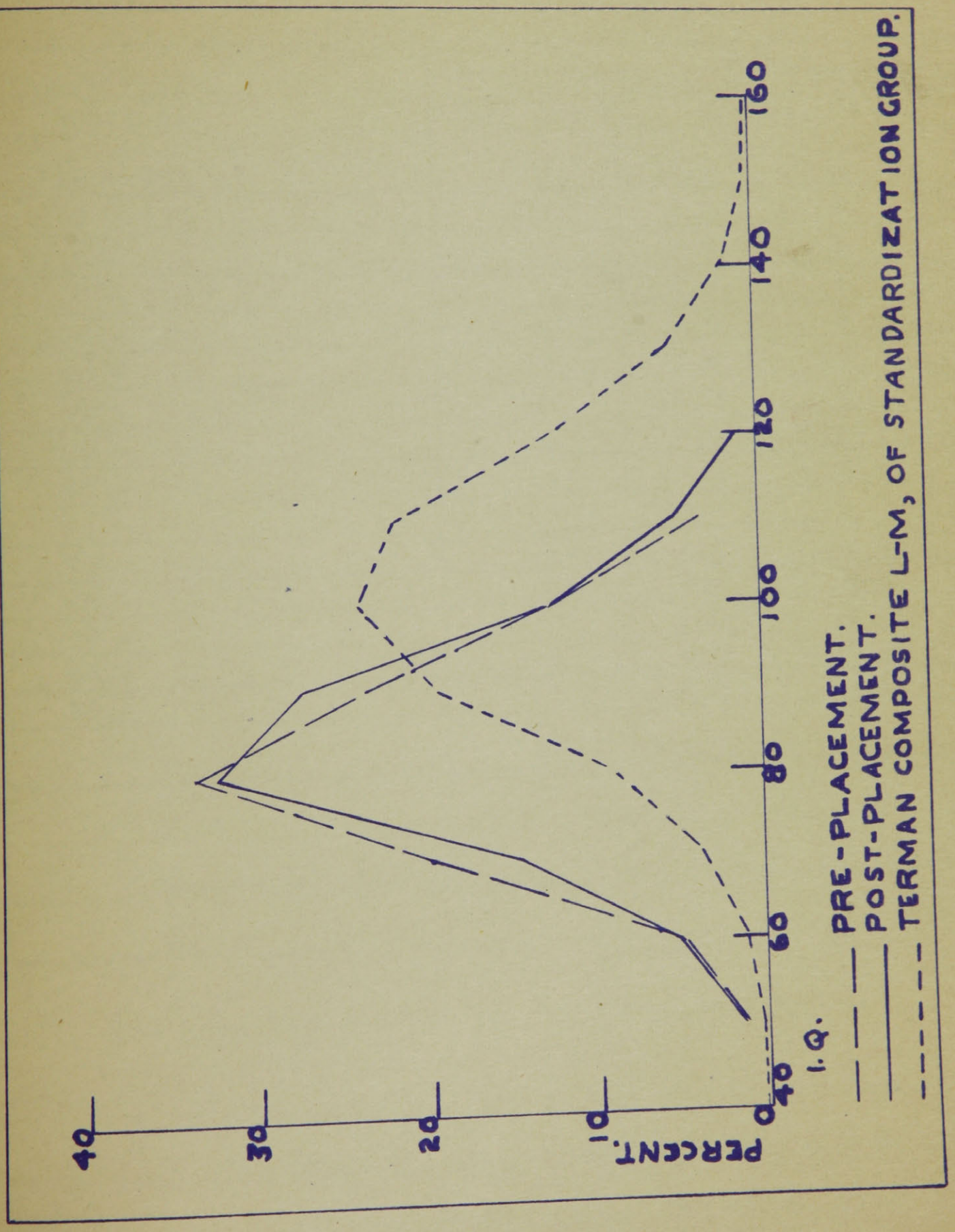

FIG.2. DISTRIBUTION OF I.Q.'S IN INSTITUTIONAL GROUP.

TABLE XXIX.

Distribution of Intelligence Quotients

Intelligence Quotient	Test			
	Pre-Placement		Post-Placement	
	No. Cases	%	No. Cases	%
120 - 124	0	0.0	1	1.2
115 - 119	0	0.0	0	0.0
110 - 114	3	3.8	4	5.0
105 - 109	6	7.5	5	6.3
100 - 104	4	5.0	5	6.3
95 - 99	7	8.8	13	16.2
90 - 94	12	15.0	8	10.0
85 - 89	13	16.2	11	13.8
80 - 84	14	17.5	16	20.0
75 - 79	10	12.5	6	7.5
70 - 74	6	7.5	6	7.5
65 - 69	3	3.8	3	3.8
60 - 64	1	1.2	1	1.2
55 - 59	0	0.0	1	1.2
50 - 54	1	1.2	0	0.0
Total	80	100.0	80	100.0
Mean	87.1		88.7	
Standard Deviation	12.2		12.9	
Median	87.0		88.0	

(3) Relation between Intelligence Test Results:

A comparison of the results of the Pre-Placement intelligence test with those of the Post-Placement test indicates a difference of 1.6 between mean IQ's. The critical ratio of the difference between mean IQ before placement and mean IQ after a period in an institutional environment is 0.81 and is indicative

of no significant increase in intelligence level. This ratio is slightly higher than that between the mean IQ's of the Pre-Placement and Post-Placement examinations of foster children, it being in the latter case .32. An analysis of Table 29 indicates that upon re-examination there was a tendency for children originally at the higher IQ levels to move into classifications nearer the mean of the group and for those at the lower levels to progress into slightly higher classifications. This tendency, however, was not quite as marked as was the case for children residing in foster homes.

The product-moment coefficient of correlation between Pre-Placement and Post-Placement intelligence tests is $\pm$ .75 $\pm$ .03. This correlation is in fairly close agreement with reported correlations between tests and retests of school age children exposed to a constant "true" home environment, and also in close agreement with the correlation found between the results of the Pre- and Post-Placement intelligence tests administered to foster children. There is also a fairly close agreement between the present findings and the results of research undertaken by Schmitt[45], Rogers, Durling and McBride[44] and Reymert and Hinton[41] to determine the effect of a marked change in environment upon the general intelligence level. Children included in these investigations were like the subjects of the present study, residents of institutions and of similar chronological ages.

(4) Relation between Intelligence of Children and the Occupational Status of their Fathers:

There is a very slight positive relationship between the general intelligence level of the children and the occupational status of their fathers, the coefficient of correlation between results of Pre-Placement tests and the occupational status of their fathers being +/- .10 +/- .08. In the case of the group of children residing in foster homes, no such relationship was evident, the coefficient of correlation between these variables being -.06 +/- .09.

(5) Changes in IQ between Pre-Placement and Post-Placement Examinations:

TABLE XXX.

Changes in Intelligence Quotients

Difference in IQ between Pre-Placement and Post-Placement Examination	No. of Cases	%
Gains: 21 to 25 points	1	1.2
16 to 20 points	4	5.0
11 to 15 points	8	10.0
6 to 10 points	13	16.3
1 to 5 points	17	21.3
No Change	1	1.2
Losses: 1 to 5 points	22	27.5
6 to 10 points	10	12.5
11 to 15 points	1	1.2
16 to 20 points	3	3.8
21 to 25 points	0	0.0

The distribution of changes in IQ between the Pre-Placement and Post-Placement examination is shown in Table 30. 50% of the IQ's changed within the limits of ± 5 points, 32.5% gained between 6 and 24 points and 17.5% lost between 6 and 18 points. A comparison of the changes in IQ which occurred among foster children with those of children residing in institutions indicates that the percentage of foster children who gained between 6 and 24 IQ points was slightly smaller than the percentage of institutional children making similar gains. The percentage of children who changed within the limits of ± 5 points or who lost between 6 and 18 points is practically identical for both groups. No change in IQ occurred in 7% of the foster children as compared with 1.2% of the institutional group.

(6) Relation between Chronological Age on Initial Test and Change in IQ:

TABLE XXXI.

Relation Between Chronological Age on Initial Test and Change in IQ

Age in Years	No. of Cases	Mean IQ of Children Examined at These Ages	Range of Changes in IQ	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
2 and 3	1	84.0	+/- 14				
4 and 5	20	85.6	+/- 24 to -5	5.1	8.59	1.92	2.66
6 and 7	27	89.3	+/- 20 to -18	-0.5	8.86	1.70	0.29
8 and 9	21	86.3	+/- 15 to -9	0.6	8.60	1.88	0.32
10 and 11	8	85.0	+/- 4 to -5	1.5	4.33	1.53	0.98
12, 13 and 14	3	83.0	+/- 18 to +/- 10	6.0	7.53	4.35	1.38

In Table 31 is shown the relation between chronological age on initial test and change in IQ. The greatest amount of change in IQ occurred among children who were 4 or 5 years of age and among those who were 12, 13 or 14 at the time of the Pre-Placement test. The least amount of change occurred among children 8 and 9 years of age. Mean changes at the 4 and 5, and 12, 13 and 14

year old levels represented increases in IQ. In general, there appears to be no significant relationship between amount of change in IQ and chronological age upon initial test, although the amount of change evident at the 4 and 5 year old level approaches statistical significance. This lack of relationship between chronological age on initial test and change in IQ was also apparent in the case of the foster home group.

(7) Relation between Pre-Placement IQ and Changes in IQ Between Examinations:

In Table 32 is shown the relationship between changes in IQ and Pre-Placement IQ. The least change in intelligence level occurred in the IQ classification 90 - 99. This was also true in the case of children residing in foster homes. The greatest amount of change occurred in the IQ classification 70 - 79. The critical ratio for this grouping is 4.16 and indicates that there is more than a chance relationship existing between the Pre-Placement IQ and change in IQ. However, it must be borne in mind that the number of cases in this classification is comparatively small and under such circumstances, the critical ratio tends to be over-estimated. In all other IQ classifications, differences between means are of no importance statistically. As was the case for the foster home group, losses occurred at 90 IQ and increased in magnitude until the IQ classification 110 - 119 was reached.

TABLE XXXII.

Relation Between Pre-Placement IQ and Changes Between Examinations

Pre-Placement IQ	No. Cases	Range of Change in IQ	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Mean IQ's	Critical Ratio
110-119	3	+/- 4 to -5	-1.7	4.03	2.33	0.73
100-109	10	+/- 15 to -8	-0.8	7.33	2.32	0.34
90-99	19	+/- 16 to -17	-0.1	8.65	1.99	0.05
80-89	27	+/- 24 to -18	0.6	8.38	1.61	0.37
70-79	16	+/- 18 to -7	7.4	7.12	1.78	4.16
60-69	4	+/- 20 to -3	6.0	8.51	4.25	1.41
50-59	1	+/- 3	-	-	-	-

(8) Relation between Age and IQ on Initial Examination:

In Table 33 chronological ages and Pre-Placement IQ's are compared in order to check on the possibility that the oldest children were the ones who were lower in IQ and showed the least change and to show the reverse for the youngest. In general, differences between groups are inconsistent in direction and the relationship between chronological age and IQ is no higher than is usually found between these two variables. This was also the case for the foster home group.

TABLE XXXIII.

Relation Between Age and IQ on Initial Examination

Initial IQ	No. Cases	Mean Age	Range	Standard Deviation in Years
110-119	3	6.4 yrs.	5 yrs. 10 mos. to 7 yrs. 5 mos.	0.70
100-109	10	8.1 yrs.	4 yrs. 9 mos. to 12 yrs. 3 mos.	2.07
90-99	19	7.9 yrs.	5 yrs. to 12 yrs. 10 mos.	2.22
80-89	27	7.6 yrs.	3 yrs. 2 mos. to 11 yrs. 2 mos.	1.96
70-79	16	7.0 yrs.	4 yrs. 6 mos. to 10 yrs. 3 mos.	1.77
60-69	4	6.5 yrs.	4 yrs. 6 mos. to 10 yrs. 6 mos.	1.66
50-59	1	12.1 yrs.	-	-

(9) Relation between Length of Placement and IQ Change:

The relation between length of the placement period and IQ change is shown in Table 34. The greatest amount of IQ change occurred among children residing in an institution for a period of between 1 year and 1 year and 11 months. This change represents a gain in IQ and the critical ratio suggests that there is actually more than a chance relationship between change in IQ and length of placement for this particular placement period.

However, it must be borne in mind that the number of cases included in this group is small and under such conditions the critical ratio tends to be over-estimated. For the group as a whole, there appears to be a slight relationship between length of placement and IQ change, the product-moment correlation being $\pm$ .19 $\pm$ .07. This relationship is somewhat closer than was evident for children residing in foster homes, the product-moment coefficient of correlation for this latter group being $\pm$ .07 $\pm$ 7.

TABLE XXXIV.

Relation Between Length of Placement and IQ Change

Length of Placement	No. of Cases	Range of Change in IQ	Mean Change in IQ	Standard Deviation of IQ Differences	Standard Error of Differences Between Means	Critical Ratio
Less than 1 year	14	+16 to -7	2.3	6.93	2.85	0.81
1 year	27	+24 to -13	5.2	8.66	1.67	3.11
2 years	18	+16 to -18	-1.1	8.41	1.98	0.56
3 years	5	+15 to -8	3.0	9.10	4.07	0.74
4 years	11	+10 to -9	-0.7	5.63	1.70	0.41
5 years	3	+14 to -8	0.3	9.74	5.62	0.53
6 years	2	+3 to -17	-7.0	10.0	7.07	1.00

S U M M A R Y:

1. In this chapter an investigation was made of the effect of institutional placement upon the general intelligence level of a group of 80 children who issued from an inferior home environment.

2. These children upon placement in institutions ranged in chronological age from 2 years 2 months to 15 years 10 months, the mean placement age being 8.2 years.

81% were legitimate and only 27% came from a traditional home environment, that is, from a home consisting of mother, father and possibly one or more brothers or sisters. The mean chronological age of the mothers was 32.9 years, that of the fathers 37.5 years.

Fathers were represented in all but the highest occupational classifications (professional), whereas mothers were unrepresented in the two highest occupational categories (professional, semi-professional and managerial). The majority of the fathers were engaged in semi-skilled types of work and the majority of the mothers in slightly skilled occupations. The mean occupational ratings of the fathers was 3.3, that of the mothers 2.9. The income of 78% of the parents was "marginal" and 22% were "dependent" and received aid from friends, relatives or social agencies.

The majority of the children came from home environments in which the material surroundings were extremely poor and which, in many instances, were characterized by continual friction between parents, immorality, parental indifference, neglect, and parental illness.

Death or desertion of one or both parents, parental illness, poor living conditions and parental immorality were factors underlying placement in a large percentage of the cases.

3. Placement periods varied in length from 3 months to 6 years 5 months, the mean length of placement being 2.3 years.

4. At the time of the initial examination, the mean chronological age of this group of children was 8.1 years, the standard deviation 2.2 years, and the median 8.0 years. Upon re-examination, the mean age was 10 years, the standard deviation 2.5 years, and the median 10.0 years.

5. The mean IQ of the Pre-Placement intelligence test was 87.1, the standard deviation 12.2 and the median IQ 87. Upon re-examination, the mean IQ was 88.7, the standard deviation 12.9 and the median IQ 88.0.

6. The critical ratio of the difference between mean IQ before placement and mean IQ following a period of institutional residence is 0.81. This is indicative of no significant increase in intelligence level. The product-moment correlation between Pre-Placement and Post-Placement tests is $+$ .75 $\pm$ .03.

7. The relation between the intelligence level of the children and the occupational status of their fathers is positive but low, the product-moment coefficient of correlation being $+$ .10 $\pm$ .08.

8. Upon re-examination, 50% of the IQ's changed within the limits of $\pm$ 5 points, 32.5% gained between 6 and 24 points and 17.5% lost between 6 and 18 points.

9. The greatest change in IQ occurred among children who were 4 or 5 years of age and among those who were 12, 13, or 14 years of age, at the time of the initial examination. In gen-

eral, there appears to be no significant relationship between amount of change in IQ and chronological age upon initial test.

10. The least change in intelligence level occurred in the IQ classification 90 - 99. The greatest amount of change occurred in the IQ classification 70 - 79, the critical ratio for this classification being 4.16 and indicative of a more than chance relationship between the Pre-Placement IQ and change in IQ. Losses occurred at 90 IQ and increased in magnitude until the IQ classification 110 - 119 was reached.

11. The relationship between chronological age and IQ is no higher than is usually found between these two variables.

12. There appears to be a low positive relationship between length of placement and IQ, the product-moment coefficient of correlation being $\pm$ .19 $\pm$ .07.

CHAPTER VI.

C O N C L U S I O N S:

The problems of this investigation were to determine the effect of foster home and institutional placement upon the intelligence of two groups of children under the care of the Children's Service Association; and to determine whether trends suggested by research undertaken in the United States, with reference to the effect of environment upon the general intelligence level, were apparent to any extent in groups of children placed under similar circumstances in the local area.

The material aspects of the "true" home environments of practically all of these children were extremely poor and were characterized by factors unconducive to healthy mental and physical development. Placement, whether in an institution or in a foster home, involved transition from an inferior "true" home environment to an environment in which the material and psychological attributes were relatively superior to those to which the children had been exposed.

The outstanding results of this investigation are as follows:

1. As far as can be determined through the medium of intelligence test performance, there was no significant increase in the IQ of the 85 children placed for varying periods of time in a foster home environment relatively superior to that of the

"true" home. The actual difference between mean IQ's was 0.3 and the critical ratio between mean IQ's 0.32.

2. There was practically no relationship between Pre-Placement IQ's and the occupational status of the "true" fathers, nor between Post-Placement IQ's and the occupational status of foster fathers.

3. The relationship between IQ change between examinations and length of foster home placement was practically of zero order, the product-moment correlation being $\pm$ .07 $\pm$ .07.

4. Results of Pre-Placement and Post-Placement intelligence tests indicate that no significant change occurred in the intelligence level of 80 children placed in an institutional environment for varying periods of time. The mean increase for this group was 1.6, the critical ratio of the difference between means being .81.

5. There was a very slight positive relationship between Pre-Placement IQ's and the occupational status of "true" fathers, the product-moment coefficient of correlation being $\pm$ .10 $\pm$ .08.

6. There is a low positive correlation between length of placement and IQ change between Pre-Placement and Post-Placement intelligence tests, the product-moment coefficient of correlation being $\pm$ .19 $\pm$ .07.

From the above data it can be readily seen that transition from an inferior home environment to a relatively superior environment failed to produce any significant increase in the gen-

eral intelligence level of the 165 children included in the present investigation. As a rule foster home placement provides for children greater opportunities for initiative and freedom of action than does institutional placement, since on account of the large number of children cared for, regimentation of activities is necessary in the majority of institutions. Foster parents are also in a better position to study the needs, ability and personality make-up of the children under their care than are workers with children in institutions. Owing to the fact, that the foster home environment probably provides a greater degree of mental stimulation than an institutional environment, one would expect foster home placement to yield a greater increase in I.Q. In the present investigation, this was not the case, the mean increase in I.Q. for the institutional group being slightly larger than that of the foster home group, although neither gain was of significance statistically.

The fact that no significant increase occurred in the general intelligence level of these children under conditions of marked change in environment is in close agreement with the findings of investigations undertaken to determine the relationship between the scores of tests and retests of children exposed to no environment, other than that of the "true" home. The present findings support the theory that the I.Q. of pre-school and school age children tends to remain constant, if constancy is defined as variability within an average of 5 I.Q. points.

There is, however, marked disagreement between the results of the present investigation and those of Freeman,(24) Burks,(7) Dawson,(18) Schott,(46) Lithauer and Klineberg,(38) who found among groups of subjects of ages similar to those in the present study, increases in IQ following a period spent in an environment relatively superior to that of their "true" homes.

Children included in the present investigation are representative of the type of child accepted for care by the Children's Service Association. The results of the present study suggest that the intelligence level of children is not likely to be modified to any significant extent by environmental influences. When considering such a possibility, workers with children should at all times bear in mind the fact, that intelligence is only one of the many elements that combine to constitute the human organism. During the placement period, therefore, emphasis should be placed not upon attempts to bolster the general intelligence level, but rather upon factors that will ensure the gradual development of good physical health, initiative, self-confidence and a sense of security, all of which are fundamental to successful participation in the affairs of adult life.

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