52-GMD-SCR
045 - Reports + Studies - Prior to 1970

FINAL REPORT ON PROJECT E - 1126, BETWEEN THE DIVISION OF PUBLIC INSTITUTIONS AND THE UNIVERSITY OF MINNESOTA "GENETICS OF MENTAL DEFICIENCY"

This project has been financed to the extent of $1,553.95 by the Division of Public Institutions for work performed between September 1, 1950, and July 1, 1951.

The data reported here include some obtained both before and after the ten months period of the contract, as the project is a continuous one. The period of time during which the contract was effective was a rather brief episode in the work which, in its modern phase, started in 1949 and will continue for several years in the future. Numerous journal papers will be published and finally, a book on the whole project. It would be unwise to report on unfinished parts of the study, as it is assumed that this report might receive public attention. Consequently, only such sections of the work as are ready for publication will be included. The final book will be made available to the Division of Public Institutions.

It is a pleasure to point out that this project, from its beginning, has been dependent upon the cooperation and generous assistance of Miss Mildred Thomson and her staff. In addition, we are deeply indebted to Dr. Ralph Rossen, Mr. C. J. Jackson, Dr. E. J. Engberg, Mr. John Pearson, Dr. R. J. Gully, Miss Caroline Perkins and many others of the Division of Public Institutions for necessary help in the work. We cannot thank

them enough, particularly for their patience and kindliness in assisting in the almost endless quest for information. Data have been obtained for an estimated 20,000 persons who compose the families and relatives of the patients of our study who were inmates of the School and Colony at Faribault, Minnesota. None of the above officials is responsible for any of the conclusions which may be found in this study.

The members of the Dight Institute who have contributed to the study are Dr. Elizabeth Reed, Mr. J. D. Palm, Dr. Ray C. Anderson, and Dr. J. A. Böök now of the State Institute for Human Genetics at Uppsala, Sweden. Dr. John Schut, now on the staff of the State Hospital at Anoka, has also made a substantial contribution as the examining neurologist for the project.

Sheldon C. Reed
Project Director

Introduction

This project is a follow-up of some of the patients who were in the Institution for the mentally deficient at Faribault about forty years ago. The original study took place between the years of 1911 and 1918, partly supported by an appropriation of $25,000 from the Legislature of the State of Minnesota. Interest in the research aspects of the genetics of mental deficiency was high at that time due to the studies of Goddard, Davenport and others who understood the importance of the Mendelian rules of heredity and because a numerical measure of intelligence in the form of the intelligence quotient had just become available. We know today that there are many limitations of the I.Q. test, which were perhaps unsuspected at that time, but we have no way of obtaining a numerical estimate of the probable performance of a child in school other than by means of some such test.

Dr. A. C. Rogers, then Superintendent of the Faribault Institution, was in large part responsible for the original grant by the Legislature. The State of Minnesota paid the research and travel expenses of the workers on the project, while their salaries were provided by the Eugenics Records Office of the Carnegie Institution at Cold Spring Harbor, New York. There were two investigators employed, both college graduates, with training in social work and in what was then known of human heredity. They were the late Miss Sadie Deavitt and Miss Marie Curial, now the wife of the Reverend Guy Menefee of Rochester, Minnesota. We are

greatly indebted to Mrs. Menefee for information concerning the original study.

The original study was never published. Miss Deavitt accepted a position in Wisconsin and Miss Curial married and assumed the duties of a pastor's wife. Apparently Dr. Rogers intended to continue the work but his illness and death prevented this. Eventually the records arrived at the Division of Public Institutions in St. Paul and copies went to the Eugenics Records Office in Cold Spring Harbor. Both sets of records were presented some years later to the Dight Institute for Human Genetics of the University of Minnesota.

In 1949 the study was reopened. The research was supported by the Minnesota Human Genetics League. The goal of the League is similar to that of a University in that it supports research and the dissemination of knowledge. It was realized that most genetic studies had been horizontal in nature, in that the investigator is forced to study only those persons alive at one time. Testimony about relatives long since dead is bound to be less useful and accurate than data for living persons. The original records seemed to have been most carefully and conscientiously compiled. Extensive information was available about not only the patients but also their relatives. It seemed entirely possible that, with such excellent data compiled two generations ago, the persons studied then would have sufficient descendents living now to complete the histories of their families by follow-up methods.

The study would thus become a longitudinal one, similar to what might have been done if the original investigators could have continued their work for forty years. Such a longitudinal survey would allow us to check the judgments of the original investigators as to the mental capacities of the persons seen then. The individual's status in this respect might change remarkably during the period of forty years. Such hindsight could provide considerable insight as to the validity both of subjective evaluations and of the numerical I.Q., as recorded by the workers forty years ago.

Enough progress has been made to indicate that such a follow-up study is not only entirely feasible, but that the results are more interesting and instructive than we had anticipated.

Selection of the Sample

Our material is not a random sample of any population. Indeed, it is almost impossible to get a truly random sample of a human population. The investigator does not introduce deliberate bias into his data but it is extraordinarily difficult for him to avoid unintended bias when he is forced to limit his population size to practical research situations. Our sample is biased in various ways, the most obvious being that we are dealing with a part of an institutionalized population.

The original sample of 549 family histories was selected in the following way. It was intended to complete the family histories for all of the approximately 1500 patients then in the State School and Colony at Faribault. Obviously, this was too

ambitious a goal, and the changing population of any large institution would make such an expectation very difficult to achieve. In order to start the project, it was decided to select first those patients whose next of kin were geographically closest to Faribault. It should be remembered that the automobile was not a very practical mechanism in those days and that travel by train and horse was slow. Miss Curial, at least, was equal to all the rigors of the frontier and drove a pair of horses that were generally considered too fast to be handled by a woman.

No attempt was made to select patients because of their type of abnormality or I.Q. No attempt was made to select those with other relatives in the institution. The only conscious bias was that of selecting patients who had relatives who could give information about the family statistics.

A drastic subsequent selection from the original 549 family histories has been made for the present study. We have eliminated many of the histories from our study according to definite criteria. In 33 cases the patient had an I.Q. of 70 or more. Some of the 33 might have been mentally deficient according to sociological or other criteria, but most of these were mentally ill rather than mentally deficient. One had an I.Q. of 112 and was obviously psychotic. It was found that the persons concerned (propositi) in 38 family histories were not actually in the institution at the time of the original study. Their family histories found their way into the group because of unusual circumstances of one kind or other. It is reasonable to assume

that these 38 histories would introduce another type of bias into the study, hence they were rejected. The third and largest group of histories set aside were the 182 histories of epileptic patients, some of whom were mentally deficient and others were not. We do not understand the relationship between mental deficiency and the epilepsy which often accompanies it and therefore wish to avoid this complication for this study.

Of the original 549 families, we have set aside the above three groups totaling 253 histories leaving 296 as the sample for our present study.

Present Status of the 296 Patients

At the beginning of 1952 it was known that 170 (57 per cent) of the original 296 propositi were dead. Seventy (24 per cent) are living in institutions and of the 70, there are 53 still in the institution at Faribault. Ten (three per cent) are still alive and have been discharged from guardianship. Forty-six (16 per cent) are outside Faribault and their whereabouts are unknown to us; probably most of them are dead.

At least 80 (27 per cent) of the original patients are still alive about forty years later, which is remarkable when it is realized that many were already old at the time of the original study.

Our 296 patients have already totaled 6725 years in institutions, an average of 22.7 years each. The average and total years institutionalized will eventually be larger as there is a fair sized population of the original patients still in the Institution.

Furthermore the examinations of these patients by Drs. Böök and Schut, as a part of the present day study, show many to be in good physical health so that these may be expected to become quite aged.

The average of 22.7 years per person hasn't much meaning as the population is divided between those who either die or leave soon after admission to the Institution and those who stay there for the rest of their lives. Ninety (30 per cent) of the patients were institutionalized for over 35 years and 14 (five per cent) were patients for over 50 years. One man was placed in a home for the aged after 65 years at the State School and Colony. Only 56 patients (19 per cent) were in the Institution for less than six years.

Intelligence Quotients of the 296 Patients

The Stanford-Binet intelligence test became available as the original study progressed, and was used almost exclusively in determining the I.Q. for the patients. In many cases the patient was tested more than once over the years. If he was tested twice, the more recent value was used. If tested more than twice, the median value was used. I.Q.'s for one person were never averaged. It is realized that an individual test score for a single person may be a very poor indication of the intelligence of that person. We do not take any one test score for an individual to be a very critical bit of information. The score does help in the over-all evaluation of the person. Furthermore, as a negative error in the score of one person can be cancelled by

the positive error in the score of another person, the average scores for different groups of persons may often have considerable meaning and utility.

The descriptive value of the I.Q.'s obtained for the patients during the original study is shown below for our selected population of 296 persons.

Table I

Intelligence quotients obtained during the original study for our 296 patients

I.Q.	"Idiots"	0-9	10-19	20-29	30-39	40-49	50-59	60-69	Unknown	Total
Number of Patients	14	6	44	41	30	66	46	43	6	296

The 14 individuals classed simply as "idiots" in the table were not tested, as it was considered that they had practically no intelligence and would give no valid score. An average I.Q. for the population may be calculated if we place the 14 classed as "idiots" in the 0-9 I.Q. group and omit the six individuals for whom intelligence quotients were not obtained. It was clear from the family histories that the latter six persons were mentally deficient but we could not find scores for them. With the above refinements of the data included, we find that the average for our population was I.Q.=38.

Consolidating the data into groups, it can be seen that 36 per cent of the patients had I.Q.'s of less than 30, there were 32 per cent with I.Q.'s from 30 through 49 and 30 per cent with I.Q.'s from 50 through 69; the remaining 2 per cent were the

unknowns. We find roughly one-third of the population in each of the idiot, imbecile and moron classes according to common terminology.

I.Q. and Years Institutionalized

We should expect to find some relationship between the I.Q. of the patient and the number of years during which he was institutionalized. Those with gross physical abnormalities would not be expected to have as long a life expectancy as patients with higher I.Q.'s and without obvious abnormalities. Such a relationship was found and is shown clearly in table II.

Table II

Average number of years the people in each I.Q. group were institutionalized

I.Q.Group	"Idiots"	0-9	10-19	20-29	30-39	40-49	50-59	60-69	Unk.	Tot.
Number of Patients	14	6	44	41	30	66	46	43	6	296
Average Years Institutionalized	6.6	12.1	21.0	27.4	26.5	29.2	20.0	16.8	23.6	22.7

The very low I.Q. groups show a heavy mortality. The relatively low average number of years of institutionalization for the 60-69 I.Q. group is a result of the departure from the institution of a large proportion of this group, with successful adjustment outside. This group is heterogeneous in that its members tend to leave the institution within a few years after admission or they stay there for very long periods of time.

The most significant group from the point of view of planning for future space requirements is the 40-49 I.Q. group which was the largest single group and stayed the longest, practically 30 years on the average. They are not physically weak enough to have low survival nor mentally strong enough to adjust outside.

An increase of the "imbecile" group in institutional admissions may be a completely justified part of a humanitarian program but it should be clear from these data that it will aggravate the problem of overcrowding and lengthen the waiting list of the future, unless new construction provides for such a contingency.

I.Q. and Eventual Status of the Patients

It would seem worth while to consider the relationship between the intelligence quotients obtained for the patients upon admission to the State School and Colony at Faribault, or as soon thereafter as was possible, and the eventual status of the patient. As was shown in the preceding section, one would expect a difference in survival at least indirectly related to the I.Q. because many of the lowest grade idiots have such severe physical defects as to lower life expectancy considerably. Furthermore, those who leave the institution, either with or without permission, would be expected to have higher intelligence quotients than those who stay. Such was the case.

Let us look first at the intelligence quotients for those patients who are known to have died within subsequent 10 year periods after their admission to Faribault. Table III shows the

intelligence quotients for the patients dying from 0-9 years after their admission, then the group dying between 10-19 years after their admissions, and so on. No distinction is made as to whether the deaths occurred inside or outisde the institution. Both the deaths taking place inside and outside are included.

Table III

Average intelligence quotients for those patients who died at different ten year intervals after admission to the Institution

	Period of years after admission					
	0-9	10-29	30-39	40-49	50 or more	Total deaths
Number of Patients Dying	50	41	33	28	18	170
Average I.Q.	29.8	27.4	32.1	36.0	35.0	31.0

It is clear from the detailed data, and is reflected in Table III, that the lowest grade idiots were practically all dead within twenty years after admission. As time passed the successive groups of dead possessed slightly higher I.Q. values. But the average I.Q. for all those who have died is only 31, somewhat less than the average of 38 for the whole population at the time of admission.

It follows that the 80 patients still alive have an average I.Q. above 38 and this is shown for the same ten year periods for those remaining alive at the end of each period. Those still in an institution are shown separately from those outisde, whose whereabouts were known. Those outisde, but with location unknown, will be considered later.

The direct relationship between higher intelligence quotients and survival is clear. Table IV shows the facts of increased survival of those with the higher intelligence quotients. The single comparison of the average I.Q. of 44.6, possessed by the 80 patients still living, with the 31.0 for the 170 now dead, (table III) is quite eloquent.

Table IV

Average intelligence quotients for those patients still alive at the end of the ten year intervals after their admission to the institution

	Period of years after admission				
Patients still in	0-9	10-29	30-39	40-49	50 or more
Number	200	147	114	88	70
Average I.Q.	38.0	39.0	41.0	41.7	42.5
Patients outside					
Number	21	25	21	16	10
Average I.Q.	45.0	50.0	50.0	56.9	59.0
Both					
Number	221	172	135	104	80
Average I.Q.	38.7	40.7	42.3	43.1	44.6

It is interesting that the average I.Q. of the patients whose present status is unknown is higher than that for those who are outside the institution but of known whereabouts (except for the "50 or more" group). There are at least two obvious reasons for this. Some have been able to make adjustments outside and have been discharged from guardianship. Others escaped from the Institution and succeeded in avoiding serious trouble, at least

in Minnesota. Those outside, with known whereabouts, remained in view of the official eye for various reasons, one of which was the need for supervision and assistance. In table V are shown the number of persons, and their average I.Q.'s who disappeared from the cognizance of the Division of Public Institutions during each ten year interval after admission to the School and Colony at Faribault.

Table V

Average I.Q.'s of those patients whose whereabouts became unknown during the indicated decade subsequent to their admission

	Period of years after admission				
	0-9	10-29	30-39	40-49	50 or more
Number of patients	25	8	5	3	5
Average I.Q.	53.2	52.5	55.0	58.4	53.0

We know that the lowest grade idiots, those with I.Q.'s below 10, die within relatively few years after admission. We also know that those leaving the institution have a higher average I.Q. than those remaining there. It would seem to follow that there would be a disproportionately large number left of the middle group, that is, the 30-49 I.Q. group. Such was found to be the case. In table VI is the detailed breakdown of the intelligence quotients for the 70 patients still in an institution. This table shows 31 out of the 70 patients still inside have the middle group I.Q. (30-49).

Table VI

Intelligence quotients of the patients still in an institution

I.Q.	"Idiots" 0-9	10-19	20-29	30-39	40-49	50-59	60-69	Unk.	Total
Number of Patients	0	0	4	13	10	21	11	10	1	70

Let us compare the percentages of persons in the three main I.Q. groups at the time of admission with the percentages of those still institutionalized. The data are given below in table VII.

Table VII

The percentages of persons in the three main I.Q. groups at the time of admission and those still institutionalized

I.Q. Group	Percentage at admission	Percentage of still institutionalized
0-29	36%	24%
30-49	32%	44%
50-69	30%	30%
Unknown	2%	2%

The proportional drop in the lowest I.Q. group and the proportional increase of the middle I.Q. group are clear from table VI; in both cases the change amounts to 12 per cent. The reason for the increase in proportion of the middle I.Q. group compared with the lowest group is that the "imbeciles" have a good life expectancy and seldom have an opportunity to leave the institution.

No change occurred in the proportion of the highest I.Q. group between admission and the present. The theoretical proportional increase in the "moron" group was not observed because a

sufficiently large number left the institution to offset the gain expected because of the decrease in the lowest group.

There are thousands of persons in the United States who have intelligence quotients from 50 through 69 and who are sufficiently well adjusted never to be considered seriously as candidates for institutional care. All the patients of this study have been institutionalized and thereby seem to have given evidence of being more handicapped than non-institutionalized persons with the same intelligence quotients. At the Minnesota School and Colony training is provided for those in the highest I.Q. group which should allow the patients to leave the institution and make a successful adjustment outside. Many patients do succeed in this program. Considering this opportunity, we may ask why the proportions of the highest I.Q. group is still as high as it was at the time of the original study.

Persons in the 50-69 I.Q. Group who are still Institutionalized

In order to attempt to discover what additional handicaps the persons still institutionalized may possess, each person will be considered who has an I.Q. between 50 and 69. A brief statement will be given for each, and in order of their number in our study. The single word Faribault is used as an abbreviation to indicate the Minnesota School and Colony at Faribault.

1. I.Q.=53. Male. Never learned to speak plainly. Otherwise physically healthy. Not admitted until almost thirteen years old. Still at Faribault.

37. I.Q.=60. Female. No particular handicap except the low I.Q. Transferred to the Ramsey County Home after 48 years in Faribault. Still in home, nine years later. Was not admitted to Faribault until nineteen years old.

45. I.Q.=60. Female. No particular handicap in early years but sight became very poor before the age of 40. Had no relatives in this country after the age of 17, except her father who was committed to Fergus Falls at that time. Was not admitted to Faribault until 17 years old. Still at Faribault.

51. I.Q.=64. Female. Two illegitimate pregnancies, but neither child lived for more than a year. No physical handicaps until about 36 years of age when she was transferred to Willmar State Hospital as psychotic. Has made a good adjustment there and has shown no erratic behavior for many years, but is still there. Was not admitted to Faribault until 17 years old.

74. I.Q.=63. Female. In the State Public School at Owatonna, (then for dependent children of various intelligence levels.), at the age of 10. Committed to Faribault at the age 12. Committed to Fergus Falls State Hospital at the age of 25. Clearly disturbed and is often violent. During quiescent periods is neat and good worker. It is quite clear that this patient would have been returned to the community were it not for her mental illness. Still at Fergus Falls.

125. I.Q.=53. Female. Had a cleft palate and never could talk plainly. Placed in Faribault at age 16. Transferred to Anoka State Hospital at age 31 and at age 49 discharged to the home run by the Little Sisters of the Poor, St. Paul. Her physical and mental handicaps would have prevented a successful adjustment outside an institution of some kind.

141. I.Q.=66. Male. A deaf mute. Admitted to Faribault at three years, eight months of age. At age 27 was discharged to Bethesda Lutheran Home where he is at present. Now-a-days he would have been placed in a school for the deaf and probably returned to the community after training.

180. I.Q.=50. Female. No particular handicap. Admitted to Faribault at age 11, transferred at age 24 to Bethesda Lutheran Home and still there.

195. I.Q.=60. Male. No particular handicap while young. Sent to Rochester State Hospital at age 53, but found not to be insane and returned to Faribault where he still is. Was not admitted to Faribault until 20 years of age.

202. I.Q.=63. Male. No particular handicap, but has a surly personality which would make adjustment difficult or impossible outside an institution. Was not admitted to Faribault until age 16 and is still there.

223. I.Q.=62. Female. Admitted to Faribault at five years of age. Had gonorrheal infection which probably would have prevented return to the community, though today the infection could have been cured. Still at Faribault.

287. I.Q.=55. Male. A paraplegic who cannot lift his feet nor can he articulate well. Admitted to Faribault when nine years of age and is still there.

307. I.Q.=67. Female. Apparently this patient was injured due to instrument delivery. She could not see very well nor hold up her head for several years after birth. Admitted to Faribault at 13 years of age and still there.

343. I.Q.=57. Female. Marked defect in speech. Admitted to Faribault at age 11. Became pregnant while on vacation at age 22. Transferred to Cambridge at age 33 though not epileptic. Still at Cambridge.

386. I.Q.=52. Male. Inarticulate speech. Admitted to Faribault at 11 years of age and is still there.

392. I.Q.=53. Female. This patient is practically blind and has been so from birth. Admitted to Faribault at nine years of age and still there.

413. I.Q.=53. Male. No particular handicaps. Patient served for 15 months in the navy and for three years in the army. Was not admitted to Faribault until 28 years old. Still at Faribault.

464. I.Q.=53. Female. No particular handicaps. Admitted to Faribault when eight years old and is still there. Probably could not have been returned to her community as her parents were not fit to look after a child.

475. I.Q.=60. Female. No particular handicap. Very poor social environment until admitted to Faribault at 17 years of age. Still at Faribault.

498. I.Q.=52. Female. Patient always somewhat deaf. Admitted to Faribault when pregnant at 22 years of age. Had earned her living until then. Still at Faribault.

515. I.Q.=53. Female. No particular handicap, but not admitted until 18 years of age. Transferred to Cambridge at age 48 in order to make room at Faribault. Not epileptic. Still at Cambridge.

The individual case history abstracts above are brief, but helpful for an understanding of the situation. Cases 1, 74, 125,

141, 223, 287, 307, 343, 386, and 392 showed handicaps which in addition to their low I.Q.'s would probably have made adjustment outside an institution impossible. Possibly with modern medical and educational facilities some of the above ten persons could have been successfully trained for community living.

In the other 11 cases (37, 45, 51, 180, 195, 202, 413, 464, 475, 498, 515) it would seem that these patients would have been trainable and could have been returned to community life, if present day facilities had been available then.

Summary

This is a follow-up study of 296 of the patients who were in the Institution for the mentally deficient at Faribault about forty years ago. It is a longitudinal study in that the patients' histories have been traced from then until the present time. A similar follow-up study of the close relatives is being made but it is not ready yet for analysis because well over 20,000 relatives are involved.

At the beginning of 1952 it was known that 170 (57 per cent) of the original 296 patients were dead. Seventy (24 per cent) are living in institutions and of the 70, there are 53 still in the Minnesota School and Colony at Faribault. Ten (three per cent) are still alive and have been discharged from guardianship. Forty-six (16 per cent) are outside the Institution and their whereabouts are unknown to us; undoubtedly most of them are dead.

Our 296 patients have already totaled 6725 years of institutional life, an average of 22.7 years per person. These figures will go up as 70 patients are still in institutions. Ninety (30 per cent) of the patients were institutionalized for over 35 years and 14 (five per cent) were patients for over 50 years. Only 56 patients (19 per cent) were in the Institution for less than six years.

The average intelligence quotient, determined for the patients at the time of admission, shows a direct relationship between survival and higher I.Q.'s. The average I.Q. of the 170 patients now dead was 31.0 and for the 80 patients still alive the I.Q. was 44.6.

With the passage of time the I.Q. composition of the group of patients changes. The "idiot" group decreases significantly because of the early death of those with the most severe physical abnormalities. The "imbecile" group increases proportionally to what it was at admission as these patients have good life expectancy and seldom leave the institution.

The "imbecile" group as a whole (I.Q. 30-49) averaged 28.0 years in the institution. Any increase of institutional admissions of this group may be completely justified as a part of an overall humanitarian program but it is clear from these data that such a policy would aggravate the overcrowding problem and lengthen the waiting list of the future, unless new construction provides for such a contingency.

We might expect a proportional increase in the moron group also. This was not observed because a sufficiently large number left the institution to offset the theoretical proportional gain.

At the Minnesota School and Colony at Faribault training is provided which allows the patient to make a good adjustment when returned to an outside community. The question arises as to why, with this opportunity, the proportion of the higher I.Q. group did not decrease. The answer seems to be that some of the patients have other handicaps of a physical nature which prevent outside adjustment. Others do not seem to have had extra physical handicaps and it would seem that these patients would have been trainable and could have been returned to the community if present day facilities had been available then.