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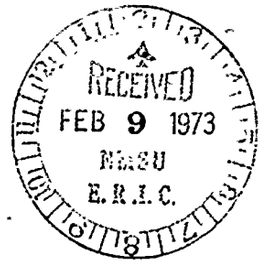
ABSTRACT

The purpose of this first phase of a 3-phase study was to obtain information to use as a base in developing a workable language arts curriculum. Part A of this report dealt with the techniques and results of in-depth interviews of 9 native families in Canada. Each family engaged in a sorting process to determine categories which were of immediate interest and concern to the family. It was found that education, heritage and culture, and family were the most common categories to the families. Part B of this report was an experimental-demonstration project directed at locating areas of weakness in the basic cognitive skills of a group of underachieving native children, evolving a remediation program, applying it, and testing its efficacy. Approximately 40 children from 5 different Grade 3 and 3-4 classes in the Ermineskin school at Hobbema were selected on the basis of the previous year's school work. Representing the lowest academic group in their grade, the children were divided into 2 groups, one having a maximum treatment and the other a minimum treatment. The significant improvement in auditory and visual memory in the group receiving maximum remediation when compared with the minimum remediation group indicated that learning strategies are not immutable but can be modified by appropriate remedial programs to enhance cognitive competence. (HBC)



A REPORT ON INDIAN EDUCATION:

(A) IN-DEPTH STUDY OF NINE INDIAN FAMILIES (A. BERGER)

(B) MEMORY AND REASONING IN NATIVE CHILDREN: AN EFFORT AT IMPROVEMENT THROUGH THE TEACHING OF COGNITIVE STRATEGIES (J. P. DAS)

BY

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[1972]

The research reported herein was performed pursuant to a contract with the Department of Indian Affairs and Northern Development (Ottawa).

PREFACE

The two-part report was prepared under a contractual grant from the Department of Indian Affairs and Northern Development to Drs. Allen Berger and J. P. Das through the University of Alberta. In the original proposal for the grant, the two principal investigators had proposed a three-phase study. The report embodies the work done in the first phase. Funding for subsequent phases will be requested. However, the work in the first phase is complete in itself, and has generated some valuable data and interpretations. Part A deals with the techniques and results of in-depth interviews of nine native families. Dr. A. Berger and his assistants are responsible for this part. Part B is an experimental-demonstration project directed at locating areas of weakness in the basic cognitive skills of a group of underachieving native children, evolving a remediation program, applying it, and testing its efficacy. J. P. Das and L. Krywaniuk are responsible for designing the study and its conductance. L. Krywaniuk has written most of the report in part B.

We believe that the research described here has both theoretical merits and practical applications. The latter have not been spelled out exhaustively, as we are aware that applications are to a great extent improvised. If the test of the pudding is in the eating, we have provided here a good recipe for making the pudding, giving reasons for the constituents we have selected, but are not quite responsible for how it will taste.

ACKNOWLEDGMENTS

The study reflected in the following paper received support from many people and organizations. Among them, we wish to extend appreciation. . .

. . . to Larry Krywaniuk, doctoral candidate; Georgina Trippe-de-Roche, research assistant; Linda Halfe and Judy Half, secretaries, all of whom contributed far beyond normal expectations;

. . . to Vicki Crowchild and to Elsie Bourgaize, respectively, currently and formerly with Edmonton-Hobbema District Office of the Department of Indian Affairs for guidance in the early stages of the study;

. . . to Maurice Wolfe, Chief of the Ermineskin Band;

. . . to the Four Band Council of the Hobbema Reserve;

. . . to Edgar Wolf, Principal, Ermineskin School, Hobbema, and the following teachers: Mr. G. Ferguson, Miss K. Graham, Miss L. Lema, Miss I. Richard and Mrs. J. Park;

. . . to Robert K. Jackson, assistant professor, the University of Alberta, for reading the first portion of the manuscript;

. . . to Les Gue, associate professor, the University of Alberta, for his encouragement throughout the study;

. . . to the Alberta Indian Association and to the Voice of Native Women.

To the nine families and 40 children who participated in the study, a special note of gratitude is extended.

Allen Berger

J. P. Das

IN-DEPTH STUDY OF NINE INDIAN FAMILIES

Allen Berger

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IN-DEPTH STUDY OF NINE INDIAN FAMILIES

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CHAPTER I

STATEMENT OF THE PROBLEM

In the nineteenth century Henri Stendhal wrote one of the great novels of the world: The Red and the Black.[1] The colors in the title refer to the uniforms worn by the military and by the clergy which, years earlier, were the only channels open to a person who wanted to "get ahead" in the world; only by joining either of these two organizations could a poor person, hundreds of years ago, climb to a higher status in life.

Today the main channel is formal education. The longer one stays in school, the better his chances of finding a more satisfying job, earning more money, living a life that he would be unable to live if he had not remained in school. There are exceptions, of course, people who have little formal education who have satisfying and well-paying jobs; but for most people, the longer they stay in school, the better their chances. In noting this rather obvious fact, I do not wish to imply that this particular situation is good or bad, for that is an entirely different matter. My only intent is to point out the practical value of education.

Why, then, do many people drop out of school as soon as they may do so legally, if not earlier? How can we explain the tens of

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[1] Henri Stendhal, The Red and the Black. Westminster, Md.: Modern Library edition.

thousands of youngsters who every year quit schools in Canada and the United States? While many leave for personal reasons, how can we explain away those who have become educational casualties?

One of the highest dropout rates for schools on this continent is among Indians. In Canada, the national dropout rate for Indian students between grades one and twelve is 94%; for non-Indian students, the national dropout rate "is approximately 12 percent."[2] In the United States:

> dropout rates are twice the national average; the level of formal education is half the national average; achievement levels are far below those of their white counterparts; and the Indian child falls progressively further behind the longer he stays in school.3

In citing these and other statistics at the Hearings before the Special Subcommittee on Indian Education, the late U.S. Senator Robert F. Kennedy observed:

> These facts are the cold statistics which illuminate a national tragedy and a national disgrace. They demonstrate that the "first American" is in fact the last American in terms of employment, education, a decent income, and the chance for a full and rewarding life. (p. 5)

Many reasons for the high dropout rate among Indian students are documented, and some are well known, and it is indeed unfortunate

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[2]Hawthorn, H.B., A Survey of the Contemporary Indians of Canada: A Report on Economic, Political, Educational Needs and Policies. Ottawa: Department of Indian Affairs and Northern Development, 1966 (volume one, 409 pp.) and 1967 (volume two, 251 pp.).

[3]Hearings before the Special Subcommittee on Indian Education and Public Welfare: Ninetieth Congress of the U.S. Senate: First and Second Sessions on the Study of the Education of Indian Children. Published in Five Parts, 1967-68. (Available from the U.S. Government Printing Office, Washington, D.C.).

to Indians, as well as to the social and economic fabric of two great nations, that greater strides have not been taken to resolve the problem. To maintain perspective, though, it must be borne in mind that there are many educationally-beneficial ideas that are not practiced in schools generally; for example, for more than thirty years we have known that "round robin" reading, with children reading aloud one after the other, is not helpful to good readers or poor readers, and yet many schools still have children reading "round robin" in a semicircle. This example and others are mentioned by Harry Singer, professor at the University of California at Riverside, in an article titled "Research That Should Have Made a Difference."[4] Singer cites six reasons for the lag between research and practice:

> inattention or even ideological resistance to research results . . . findings contrary to conventional wisdom . . . acceptability of only those research findings that are in accord with the prevailing maturational-environmental bias . . . susceptibility of educational decision makers to commercial propoganda . . . variation in adequacy of dissemination of findings . . . the lack of alternative methods to educationally-unsound practices.

The existence of so great a lag between research and practice is unfortunate, particularly when other nations, like Japan, have set up programs to reduce this lag to about two years.[5]

Our yawning lag between sound research and practice more drastically affects children from poorer homes, than children from middle

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[4]Harry Singer, "Research That Should Have Made a Difference," Elementary English, Vol. 47, No. 1, January 1970, pp. 27-34.

[5]L.D. Nelson, "Some Observations on Elementary Schools in Japan," Elements, Vol. 3, No. 4, December 1971.

class homes to whom school is more closely geared. It is these children from financially-lower class homes with whom our successes have been limited, even though educators have been the leaders among professional groups attempting to serve the needs of the poor as well as the needs of the middle and upper classes.

The medical profession never had any problems in meeting the needs of the poor because until recently the medical profession callously disregarded them. Even today the United States has one of the highest infant mortality rates among the developed nations of the world, and in Canada, the lifespan of Indians is far shorter than that of whites.

The legal system too can be charged with gross negligence in meting out justice to those less fortunate. At this very moment, because courts are so clogged, the majority of people in U.S. prisons are still awaiting trial - these being mostly people unable to afford bail.[6]

Only recently has the business and corporate world moved a tiny bit away from the anachronistic and outmoded profit-oriented philosophy of Adam Smith as expounded in The Wealth of Nations, a

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[6] The use of videotape would shorten trials of average length "by 50 per cent or more," according to Professor of Law, Robert L. Simmons in "An Answer to Trial Delay" in Center Report (February 1972) a publication of the Center for the Study of Democratic Institutions. For additional relevant information, see "Performance Contracting and Educational Accountability: Past, Present, and Future," by Allen Berger in Elements (Vol. 3, No. 8), April 1972; and "Introduction," Measure for Measure, co-edited by Allen Berger and Blanche Hope Smith, The Tenth (1972) Report of the Committee on Classroom Practices in Teaching English, National Council of Teachers of English (1111 Kenyon Road, Urbana, Illinois, 61801).

useful document for the nineteenth century but a disastrous one for the twentieth. Some trade unions still keep out blacks and other groups - except on a token basis.

Even our governmental agencies tend to respond sluggishly to the needs of the poor. Little was heard as long as drug addiction was confined to the ghettos, but as soon as it spread into the suburbs, committees were formed, commissioners began traveling up and down the land to investigate.

What might educators do to meet the needs of the poor who happen to be Indians? How might we put into practices some of the educationally-beneficial ideas already known?

To find useful answers to these questions, a three phase study was designed. The first phase involved in-depth conversations with nine Indian families during the 1971-72 school year, along with work with forty grade three Indian children. (This first phase is presented in this report.) The envisioned second phase involves the creation of a language arts curriculum based in part upon the in-depth conversations with the families, discussions with the children within these families, and a continuation of work with the forty children now in grade four. The final phase involves training teachers to use the newly developed curriculum.

The reader will find some relatively unique features in this study, which include interviewing without using tape recorders, examining the data through content analysis, involving the families,in organizing the data, and using the first person to report the results.

CHAPTER II

REVIEW OF LITERATURE

Of major influence on my thinking toward this work was James Agee's great book, Let Us Now Praise Famous Men. Let me share a bit with you about this masterpiece.

James Agee was in his twenties, a graduate of Exeter Academy and Harvard University when, in 1936, he was assigned by his employer, Fortune magazine, to write a piece about the migrant workers residing in the southern part of the United States. With Walker Evans, a photographer, Agee left New York City and lived with three migrant families for six weeks in Alabama. Fortune rejected his manuscript but, five years later, it was published in expanded form by Houghton Mifflin Publishing Company.

However, only the most perceptive critics recognized the unique quality of his work; fewer than 600 copies were sold, with sales dropping to 50 copies annually. But in 1960, when the same publisher brought out a new edition, the book was instantly acclaimed as "the most famous unknown book in contemporary letters" and "one of the extraordinary, one of the great books of our times . . ."

Unfortunately, five years before the new edition appeared, Agee was dead of a heart attack in New York City; his death occurred in 1951, the same year which saw the appearance of another of his works, A Death in the Family, which won the Pulitzer Prize and which drew attention to his earlier writings, one being Let Us Now Praise Famous Men.

I wish I had the power to communicate with you about this book.

Let me quote a portion from the Preface:

> During July and August 1936 Walker Evans and I were traveling in the middle south of this nation, and were engaged in what, even from the first, has seemed to me rather a curious piece of work. It was our business to prepare, for a New York magazine, an article on cotton tenantry in the United States, in the form of a photographic and verbal record of the daily living and environment of an average white family of tenant farmers. We had first to find and to live with such a family; and that was the object of our traveling.
>
> We found no one family through which the whole of tenantry in that country could be justly represented, but decided that through three we had come to know, our job might with qualified adequacy be done. With the most nearly representative of the three we lived a little less than four weeks, seeing them and the others intimately and constantly. At the end of August, long before we were willing to, we returned into the north and got our work ready.

From the Preamble:

> I spoke of this piece of work we were doing as "curious." I had better amplify this.
>
> It seems to me curious, not to say obscene and thoroughly terrifying, that it could occur to an association of human beings drawn together through need and chance and for profit into a company, an organ of journalism, to pry intimately into the lives of an undefended and appallingly damaged group of human beings, an ignorant and helpless rural family, for the purpose of parading the nakedness, disadvantage and humiliation of these lives before another group of human beings, in the name of science, of "honest journalism" (whatever the paradox may mean), of humanity, of social fearlessness, for money, and for a reputation for crusading and for unbias which, when skillfully enough qualified, is exchangeable at any bank for money (and in politics, for votes, job patronage, abelincolnism, etc.); and that these people could be capable of meditating this prospect without the slightest doubt of their qualification to do an "honest" piece of work, and with a conscience better than clear, and in the virtual certitude of almost unanimous public approval. It seems curious, further, that the assignment of this work should have fallen to persons having so extremely different a form of respect for the subject, and responsibility toward it, that from the first

and inevitably they counted their employers, and that Government likewise to which one of them was bonded, among their most dangerous enemies, acted as spies, guardians, and cheats, and trusted no judgment, however authoritative it claimed to be, save their own: which in many aspects of the task before them was untrained and uninformed. It seems further curious that realizing the extreme corruptness and difficulty of the circumstances, and the unlikelihood of achieving in any untainted form what they wished to achieve, they accepted the work in the first place. And it seems curious still further that, with all their suspicion of and contempt for every person and thing to do with the situation, save only for the tenants and for themselves, and their own intentions, and with all their realization of the seriousness and mystery of the subject, and of the human responsibility they undertook, they so little questioned or doubted their own qualifications for this work.

All of this, I repeat, seems to me curious, obscene, terrifying, and unfathomably mysterious.

So does the whole course, in all its detail, of the effort of these persons to find, and to defend, what they sought: and the nature of their relationship with those with whom during the searching stages they came into contact; and the subtlety, importance, and almost intangibility of the insights or revelations or oblique suggestions which under different circumstances could never have materialized; so does the method of research which was partly evolved by them, partly forced upon them; so does the strange quality of their relationship with those whose lives they so tenderly and sternly respected, and so rashly undertook to investigate and to record.

So does the whole subsequent course and fate of the work: the causes for its non-publication, the details of its later acceptance elsewhere, and of its design; the problems which confronted the maker of the photographs; and those which confront me as I try to write of it: the question, Who are you who will read these words and study these photographs, and through what cause, by what chance, and for what purpose, and by what right do you qualify to, and what will you do about it; and the question, Why we make this book, and set it at large, and by what right, and for what purpose, and to what good end, or none . . .

If I could do it, I'd do no writing at all here. It would be photographs; the rest would be fragments of cloth, bits of cotton, lumps of earth, records of speech, pieces of wood and iron, phials of odors, plates of food and of

excrement. Booksellers would consider it quite a novelty; critics would murmur, yes, but is it art; and I could trust a majority of you to use it as you would a parlor game.

A piece of the body torn out by the roots might be more to the point.

As it is, though, I'll do what little I can in writing. Only it will be very little. I'm not capable of it; and if I were, you would not go near it at all. For if you did, you would hardly bear to live.

From the Foreword (by Walker Evans):

At the time, Agee was a youthful-looking twenty-seven. I think he felt he was elaborately masked, but what you saw right away - alas for conspiracy - was a faint rubbing of Harvard and Exeter, a hint of family gentility, and a trace of romantic idealism. He could be taken for a likable American young man, an above-average product of the Great Democracy from any part of the country. He didn't look much like a poet, an intellectual, an artist, or a Christian, each of which he was. Nor was there outward sign of his paralyzing, self-lacerating anger. His voice was pronouncedly quiet and low-pitched, though not of "cultivated" tone. It gave the impression of diffidence, but never of weakness. His accent was more or less unplaceable and it was somewhat variable. For instance, in Alabama it veered towards country-southern, and I may say he got away with this to the farm families and to himself.

His clothes were deliberately cheap, not only because he was poor but because he wanted to be able to forget them. He would work a suit into fitting him perfectly by the simple method of not taking it off much. In due time the cloth would mold itself to his frame. Cleaning and pressing would have undone this beautiful process. I exaggerate, but it did seem sometimes that wind, rain, work, and mockery were his tailors.

Physically, Agee was quite powerful, in the deceptive way of uninsistent large men. In movement, he was rather graceless. His hands were large, long, bony, light, and uncared for. His gestures were one of the memorable things about him. He seemed to model, fight, and stroke his phrases as he talked. The talk, in the end, was his great distinguishing feature. He talked his prose, Agee prose. It was hardly a twentieth century style; it had Elizabethan colors. Yet it had extraordinarily knowledgeable contemporary content. It rolled just as it reads; but he made it sound natural - something just there in the air like any

other part of the world. How he did this no one knows. You would have blinked, gaped, and very likely run from this same talk delivered without his mysterious ability. It wasn't a matter of show, and it wasn't necessarily bottle-inspired. Sheer energy of imagination was what lay behind it. This he matched with physical energy. Many a man or woman has fallen exhausted to sleep at four in the morning bang in the middle of a remarkable Agee performance, and later learned that the man had continued it somewhere else until six. Like many born writers who are floating in the illusory amplitude of their youth, Agee did a great deal of writing in the air. Often you had the impulse to gag him and tie a pen to his hand. That wasn't necessary; he was an exception among talking writers. He wrote - devotedly and incessantly.

Night was his time. In Alabama he worked I don't know how late. Some parts of Let Us Now Praise Famous Men read as though they were written on the spot at night. Later, in a small house in Frenchtown, New Jersey, the work, I think, was largely night-written. Literally the result shows this; some of the sections read best at night, far in the night. The first passage of A Country Letter (p. 47), is particularly night-permeated.

Agee worked in what looked like a rush and a rage. In Alabama he was possessed with the business, jamming it all into the days and the nights. He must not have slept. He was driven to see all he could of the families' day, starting, of course, at dawn. In one way, conditions there were ideal. He could live inside the subject, with no distractions. Back-country poor life wasn't really far from him, actually. He had some of it in his blood, through relatives in Tennessee. Anyway, he was in flight from New York magazine editorial offices, from Greenwich Village social-intellectual evenings, and especially from the whole world of high-minded, well-bred, money-hued culture, whether authoritarian or libertarian. In Alabama he sweated and scratched with submerged glee. The families understood what he was down there to do. He'd explained it, in such a way that they were interested in his work. He wasn't playing. That is why in the end he left out certain completed passages that were entertaining, in an acid way. One of these was a long, gradually hilarious aside on the subject of hens. It was a virtuoso piece heightened with allegory and bemused with the pathetic fallacy.

He won almost everybody in those families - perhaps too much - even though some of the individuals were hard-bitten, sore, and shrewd. Probably it was his diffidence that took him into them. That non-assurance was, I think,

> a hostage to his very Anglican childhood training. His Christianity - if an outsider may try to speak of it - was a punctured and residual remnant, but it was still a naked, root emotion. It was an ex-Church, or non-Church matter, and it was hardly in evidence. All you saw of it was an ingrained courtesy, an uncourtly courtesy that emanated from him towards everyone, perhaps excepting the smugly rich, the pretentiously genteel, and the police. After a while, in a round-about way, you discovered that, to him, human beings were at least possibly immortal and literally sacred souls.
>
> The days with the families came abruptly to an end. Their real content and meaning has all been shown. The writing they induced is, among other things, the reflection of one resolute, private rebellion. Agee's rebellion was unquenchable, self-damaging, deeply principled, infinitely costly, and ultimately priceless.

Like James Agee, the innovative anthropologist Oscar Lewis also knew the value of knowing some people well rather than many people superficially. In Five Families, he examined five days in the lives of five families living in and around Mexico City. He expanded and refined his research techniques in studies culminating in two more volumes: Pedro Martinez and The Children of Sanchez: Autobiography of a Mexican Family. Two of his last works are La Vida: A Puerto Rican Family in the Culture of Poverty - San Juan and New York and A Study of Slum Culture: Background for La Vida. In his Introduction to La Vida, he briefly describes the methods used in his study:

> The methods used in this study are a combination of the traditional techniques used in sociology, anthropology and psychology, and include questionnaires, interviews, participant-observation, biographies, a limited number of intensive whole-family case studies, and the application of selected psychological tests, such as the Thematic Apperception, Rorschach and the Sentence Completion. A novel aspect of the project was the use as research assistants of two lower-class Mexicans whose families I had studied in previous research. These assistants gave me a Mexican view of Puerto Rican slum culture and helped point up the similarities and differences between Mexican and Puerto Rican subcultures.

Four basic schedules were applied to each sample family. The schedules dealt with household composition, an inventory of major household items, a summary of the residence and employment history of each adult, and information concerning migration to New York.

In addition to the four basic questionnaires administered to each family, fifteen other schedules containing over five hundred questions were also used. These questionnaires dealt with the following subjects: complete household inventory, including clothing, animals, religious objects, books, etc.; friendship patterns within the neighborhood; patterns of compadrazgo; family relations; income and expenditures; division of labor; recreational patterns; cosmopolitanism; health and treatment of disease; politics; religion; and world view. The administration of the nineteen schedules took about twelve hours per informant.

The intensive studies of families involved the establishment of deep personal ties without which we could never have obtained the intimate data presented in this volume. My assistants and I spent many hours attending family parties, wakes and baptisms, and responding to emergency calls. We took people to the hospital, secured their release from jail, filled out applications for them, arranged doctors' appointments, helped get apartments and jobs, and helped get families on relief.

The tape recordings of the life histories were begun only after we knew the family well. In some cases we visited the family regularly for a few months and learned a great deal about their lives in casual conversations. Later, in the recordings, we would ask the informants to repeat stories which we already knew so that we could have them in their own words.

My approach to family studies requires exhaustive research which by its nature precludes large samples. The study of one hundred families was conducted by the questionnaire method in order to gain background material for the much more detailed study of a smaller group of families. The intensive study of the family has many methodological advantages. Because the family is a small social system, it lends itself to the holistic approach of anthropology. The family is a natural unit of study, particularly in a large metropolis like San Juan or New York. In studying a culture through the intensive analysis of specific families we learn what institutions mean to individuals. It helps us get beyond form and structure to the realities of human life. Whole-family studies bridge the

> gap between the conceptual extremes of culture at one pole and the individual at the other; we see both culture and personality as they are interrelated in real life.
>
> Family studies also serve to delineate the social networks within which families transact their lives, and to this extent the family-study approach and the social-network-study approach are overlapping and mutually reinforcing. Relatives, neighbors, friends, compadres, fellow workers, employers, teachers, priests, spiritualists, policemen, social workers, shopkeepers all come and go in these autobiographies. On the whole, however, most interpersonal relations occur within a fairly narrow circle of close relatives, which serves as a defense in economic and emotional crises.

Shortly before his death, Lewis completed a volume devoted to a discussion of his research methods.

In reflecting on the works of James Agee and Oscar Lewis, it is interesting to observe that Agee was a novelist who used some of the best techniques of the sociologist, and Lewis was a sociologist who used some of the best techniques of the novelist.

Since the works of Agee and Lewis, there have been a growing number of in-depth studies. One of the best is Elliot Liebow's Tally's Corner: A Study of Negro Streetcorner Men. In it, Liebow describes what he learned about some twenty men who hung around a streetcorner in Washington, D.C. His revealing data were collected over a one and a half year period and originally appeared as a doctoral dissertation in anthropology at The Catholic University of America. Tally's Corner has been praised as "nothing short of brillant - a work of importance" by David Patrick Moynihan, Director, Joint Center for Urban Studies, M.I.T. and Harvard University.

Other studies of interest in regard to relevant research techniques are The Cloak of Competence and 400 Losers. In the former,

Robert B. Edgerton reports a detailed examination of adults living outside an institution; in the latter, Winton M. Ahlstrom and Robert J. Havighurst examine some five years in the lives of boys identified as "socially maladjusted" in Kansas City, Missouri.

The major research statement found most useful is the monograph entitled Unobtrusive Measures: Nonreactive Research in The Social Sciences by Eugene J. Webb et al. Containing approximately 700 references, this highly readable document delves into some of the major problems inherent in social research, including invasion of privacy and how it can be handled ethically.

Useful interviewing techniques are described by Alfred Benjamin in The Helping Interview and by Lewis Anthony Dexter in Elite and Specialized Interviewing. Benjamin explains that, to him, "an interview is a conversation between two people, a conversation that is serious and purposeful," and Dexter elaborates on this point of view. William Labov incorporates this kind of interviewing in his research with culturally different children.

Other useful writings are Growing Up Poor, a document prepared under the auspices of the Division of Research, Welfare Administration, U.S. Department of Health, Education and Welfare, Washington, D.C., and Erik H. Erikson's Childhood and Society, notably his chapter dealing with the Sioux and Yurok.

The most informative documents directly involving Indians is the five volume Hearings before the Special Subcommittee on Indian Education of the Committee on Labor and Public Welfare (Ninetieth Congress of the U.S. Senate: Study of the Education of Indian Children,

1967-68), and the two volume Hearings before the Subcommittee on Indian Education of the Committee on Labor and Public Welfare (Ninety-First Congress of the U.S. Senate: Policy, Organization, Administration, and the News Legislation Concerning the American Indians, 1969). Extremely useful also is The Education of American Indians: A Survey of the Literature, prepared for the Special Subcommittee on Indian Education, 1969.

Of interest also is the Canadian counterpart, A Survey of The Contempory Indians of Canada: A Report on Economic, Political, Educational Needs and Policies. The two volume report was written in the early 1960's by H.B. Hawthorn under the auspices of the Department of Indian Affairs and Northern Development.

Other unpublished documents found useful are Joseph E. Couture's doctoral dissertation, Alberta Indian Youth: A Study in Cree and Blood Conflict, completed in 1972; and Donald Henry Holmgren's masters thesis, Experiences of Indian Students Undergoing Acculturation in Urban High Schools: An Exploratory Study, completed in 1971. Both research documents were prepared at The University of Alberta Education Centre.

Published documents also found useful are Harold Cardinal's The Unjust Society and William I.C. Wuttunee's Ruffled Feathers. Cardinal expresses his outrage at "The Tragedy of Canada's Indians," whereas Wuttunee, who is also Cree, looks at the situation from a different perspective. Cardinal is President of the Alberta Indian Association; Wuttunee is a lawyer in Calgary, Alberta.

Other writings, published and unpublished, that were consulted are indicated in the section, Related Readings. Relatively little hard core research could be found dealing with Indian education.

CHAPTER III

THE STUDY

The purpose of the first phase of this three-phase study* was to obtain information to use as a base in developing a workable language arts curriculum. The information was obtained through in-depth conversations with nine Indian families. Five of these families live in the City of Edmonton,** one lives on the Winterburn Reserve, about five miles west of Edmonton, and three live on the Hobbema Reserve, about 50 miles south. A highway passes through the Hobbema Reserve, making the trip by car about one hour from Edmonton.

Before inviting families to participate, discussions were conducted with representatives of the Alberta Indian Association to determine variables to be considered; the families then were selected with the following variables in mind: treaty,*** non-treaty, Indian, Metis,

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*See page 5 for brief explanation of the three phases of the study.

**Edmonton with its approximately 500,000 people is located about 350 miles north of the Canada-United States border near the Rocky Mountains. It is the furthest northern major city on the continent and serves as the jumping off point for the Yukon and Northwest Territories.

***There are nearly as many definitions of "Indian" as there are experts; for purposes of this study, a treaty Indian has a legal and formal connection with the federal government and is registered as a treaty Indian, hence "treaty," "registered," and "status" Indian have essentially synonymous meanings. Metis refers to a person born of a parent who is Indian and a parent who is white and, usually, the term "Metis" refers to a non-status Indian.

age of children, mixed marriage (white husband and Indian woman, vice versa), and varying levels of income.

In addition to discussions with the Alberta Indian Association, discussions were also conducted with individuals at the University of Alberta, the Voice of Native Women, and the Edmonton Office of the Department of Indian Affairs. Permission was needed from the Four Band Council to meet with families living on the Hobbema Reserve and to work with elementary school children attending the reserve's Ermineskin School. The chiefs of the four bands (Ermineskin, Louis Bull, Montana, Hobbema) had placed a ban on all research. Following the Band Council meeting, October 1972, work with the children and families began.

Note: The nine families form - not a sample - but the total population. This distinction is important and is discussed somewhat by Oscar Lewis (see pages 11 - 13) and in the following passage:

> There are many mass surveys as to the sociopsychological characteristics of children who ultimately become sufficiently anti-social as to be legally classified as juvenile delinquents. We know that most often they come from broken homes, that, except for sex offenses, they are more likely to be boys than girls, that their social malfunctioning is accompanied, and usually preceded, by academic malfunctioning, and so on. Yet we still have not learned from this mass survey approach how the different deprivations and difficulties interact so that some children become serious delinquents and others, who exhibit the same characteristics identified by the mass survey, do not. The answer lies in other characteristics yet to be identified, and/or in the pattern of interaction of the characteristics in the individual. It is at this level that the case-study survey approach would function, studying the characteristics as they exist in company with each other within the person and life space of individuals.
>
> - from David J. Fox, The Research Process in Education, New York: Holt, Rinehart and Winston, 1969, page 427.

Population

With consideration of the above-mentioned variables in mind, and with the support of the native organizations, families were identified and invited to participate. Following are brief descriptions of the families:

TREATY

Mr. and Mrs. A

Married for 16 years

	Age	Education	No. of Children
Husband - Field Worker	46	Grade 7	3
Wife - Day Care Centre Aid	34	Grade 8	

Children

Girl	Age 14	Grade 9
Girl	Age 9	Grade 5
Boy	Age 8	Grade 4

NON-TREATY - (formerly Treaty, but married Metis)

Mr. and Mrs. B

Married for 25 years

	Age	Education	No. of Children
Husband - Hospital Orderly	47	Grade 8	9
Wife - Housewife	44	Grade 7	

Children

Girl	Age 24 - Married	Grade 12 plus secretarial course taken at Northern Alberta Institute of Technology.
Boy	Age 22 - Married	Grade 12
Girl	Age 19 - Single	Left school in Grade 12
Girl	Age 17 - Single	Doing Grade 12
Boy	Age 16	Grade 10 (at home)
Girl	Age 13	Grade 8
Girl	Age 12	Grade 7
Girl	Age 11	Grade 7
Boy	Age 10	Grade 4

NON-TREATY

Mr. and Mrs. C

Married for 11 years

	Age	Education	No. of Children
Husband - Sheet Metal Mechanic	31		4
Wife --Housewife	30	Grade 12	

Children

Boy	Age 10
Boy	Age 7
Boy	Age 5
Boy	Age 3

NON-TREATY

Mr. and Mrs. D

Married for 40 years

		Age	Education	No. of Children
Husband	- Program administration Officer	58	Grade 5	3
Wife	- Housewife	57	Grade 7	

Children

Male Age 37 - Married

Male Age 34 - Married

Male Age 31 - Married

TREATY

Mr. and Mrs. E

Married for 10 years

	Age	Education	No. of Children
Husband - Works in car body shop	30	Grade 9	3
Wife - Housewife	28	Grade 12	

Children

Girl	Age 8
Boy	Age 7
Boy	Age 4

TREATY

Mr. and Mrs. F

Married for approximately 10 years

	Age	Education
Husband - Artist	Approximately 38	University Level
Wife - Housewife	Approximately 34	

Children: three, the oldest five years of age

TREATY

Mr. and Mrs. G

Married for 33 years

	Age	Education	No. of Children
Husband - Winter jobs	54	Grade 3	6
Wife - Works at Kindergarten (Volunteer)	51	Grade 5	

Children

Girl	Age 29	Grade 6
Boy	Age 27	Grade 5
Boy	Age 18	Grade 10
Boy	Age 14	Grade 9 (dropped out)
Girl	Age 10	Grade 3
Girl	Age	Kindergarten

TREATY

Mr. and Mrs. H

Married for 20 Years

	Age	Education	No. of Children
Husband - Farmer	39	Grade 9	8
Wife - Drop-In-Centre			

Children

Girl	Age 17	Grade 12
Girl	Age 16	Grade 11
Girl	Age 15	Grade 10
Boy	Age 13	Grade 9
Girl	Age 12	Grade 8
Girl	Age 11	Grade 5
Boy	Age 9	Grade 3
Girl	Age 6	Grade 1

TREATY

Mr. and Mrs. I

Married for 12 years

	Age	Education	No. of Children
Husband - Farmer	38	Grade 8	3
Wife - Housewife			

Children

Girl	Age 10	Grade 5
Boy	Age 8	Grade 2
Girl	Age 5	Kindergarten

Design and Procedures

The general design of the study flowed from the question:

> What are some of the views and feelings of Indian parents in regard to education, culture, and related matters?

To answer this question, each family was visited on four separate occasions (with one exception) in or near his home. Information was gathered during the first three visits and organized during the final visit.

With nearly every family, except where transportation facilities were not available readily, the following pattern of visitation was followed:

Visits	Visitors
First	Berger
Second	Berger and Trippe-de-Roche
Third	Trippe-de-Roche
Fourth	Berger and Trippe-de-Roche

Each visit lasted from one to seven hours, and an attempt was made to not interrupt the ongoing lives of the families.

The conversations, or "interviews," were conducted in a manner suggested by Lewis Dexter in his book, Elite and Specialized Interviewing, and by Alfred Benjamin who, in The Helping Interview, writes:

> I do not see the interviewer as passive in the least. On the contrary, I see him as active at all times. I am not implying that he should talk a great deal, but I am saying that he should make his presence and interest continuously felt. The interviewer is active in gaining as deep an understanding as possible of the interviewee's world . . . At all times he is active in revealing himself to be a person deeply involved in another person. (p. 38).

The conversations were conducted in an atmosphere of trust and the families were informed of the nature of the study. As W.F. Whyte found in obtaining his data reported in Street Corner Society, questions arise as the newness of the situation unfolds, and, like Whyte, we found that our most useful approach was to come with a wondering mind.*

Since we were more concerned with ideas and feelings and interrelationships than with speech patterns, the families were visited in their familiar surroundings and no tape recording equipment was used whatsoever. To a certain extent, I drew upon my earlier experience as a newspaper reporter, but to check the accuracy of recollecting information, the following exercise was conducted early in the study. There was a conversation with two Indians not connected with the families, and this conversation was recorded; immediately afterwards the recollections were recorded onto another tape: both tapes

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*Cf. Whyte as noted in Selltiz et al., pp. 215-17.

were transcribed and the typed transcriptions were given to three independent observers to assess the quality of the recollected conversation against the criterion of the running conversation which had been recorded. The results of the assessment made by the independent observers were extremely positive.

On the first of the four visits the families were informed that immediately following each visit the recollections would be recorded, transcribed, and then returned to them, in written form, for them to organize on the final visit. The manner in which the information was organized is discussed in the following chapter.

CHAPTER IV

FINDINGS

The information obtained during the conversations with each family was subjected to content analysis.* The typed recollections were scrutinized to cull out each meaningful unit of expression (e.g., Harold Cardinal is a great man). Each of these units of expression was placed onto a 3 x 5 card; each family had up to 75 cards. On the fourth visit, each family placed each of their own cards into categories of their own creation; that is, they looked at a card, said it was "religion" as an example, and then the card was slipped into an envelope and the word "religion," was written on the envelope. At the end, some envelopes contained many more cards than did other envelopes, some families had many more envelopes, representing categories, than other families.

Each family engaged in a final sorting process. They took the envelopes bearing the categories and made two piles, one pile containing items of immediate concern and interest to them, and the other pile containing items of lesser concern and interest to them.

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*Appreciation is extended to Dr. T.O. Maguire for his guidance in using this technique of analysis. The intent was to create meaningful categories rather than superimpose another person's frame of reference onto the data. For formal discussion, see Fred N. Kerlinger's chapter on "Q Methodology" in Foundation of Behavioral Research, New York: Holt, Rinehart and Winston, 1967.

Following are the results of the data analyses:

Family A

Following the three conversations, they arranged their data into the following categories:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Culture	4*	Community Development	1
Economic Development	2	Discrimination	1
Indian Organizations	7	Family Tree	2
Pre-School	2	History	6
Policies	3	Immaterial	1
Reserve School	2	Jilted	1
School Curriculum	6	Personal Opinions	8
Treaty Rights	3	Religion	3
Up-Grading	1	Social - Economic	1
		Social Life	2
		Talent - Art	1

*The numbers represent the number of cards placed into the envelopes on which the categories made by the families were written.

Family B

Following the three conversations, they arranged the data into the following categories:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Culture	16	Comments	20
Discrimination	4	Jobs	1
Education	8	Not Involved	4
Language	1		
Political	8		
School	12		

Family C

They arranged their data as follows:

Of Immediate Interest and Concern		Of Lesser Interest and Concern
Discrimination	14	
Education	9	
Home Life	6	
Indian Culture	6	
Integration	14	
Politics	8	"(the wordings were changed)" 11

Family D

They arranged their data on the following categories:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Arts and Crafts	1	Aboriginal Claim Lands	1
Culture	1	Assimilation	3
Friends	1	Control	1
Geneology	3	Criticism	1
Grouping	1	Debt (Bad)	2
Heritage (Return to)	1	Demonstration	1
Historical	2	Discrimination	1
People (Special)	1	Education	7
Togetherness	2	Emotional	1
Tradition	1	Health	1
(This family indicated that, while all the information on the cards was accurate, their views on some matters had changed during the interval of time.)		Indian Lands (Extinguishing)	1
		Integration	1
		Law	2
		Luxury	1
		Militant	1
		Misunderstanding	1
		Opinions	2
		Organizations	3
		Politics	1
		Programing	1
		Progress (toward white culture)	2
		Progression	2
		Recognition	2
		Religion	3
		Research	2
		Resignation	1
		Retracting Support	1
		Segregation	1
		Transition	2
		Viable Operation	1

Family E

They organized their data into the following categories:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Education	29	Damage to Treaty Rights	2
Family Relations	13	Integration	7
Husband	8	Religion	1
Indian Culture	6	Residential School	3
Life at Home	5	Work	4
Life on the Reserve	12		

Family G*

Their data were organized as follows:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Communication (People on Reserve)	4	Damage to Treaty Rights	2
Education	23	Integration	7
Family	7	Religion	1
Heritage (to keep)	6	Residential School	3
Language	4	Work	4
Religion (#1)	7		
Integrated	1		

*Some of the in-depth conversations with this family were conducted in Cree.

Family H

They arranged their data as follows:

Of Immediate Interest and Concern		Of Lesser Interest and Concern	
Education	24	Job Application	1
Indian Culture	2	Social Status	4
Research	1		
Social Problems	2		

Family I

Of Immediate Interest and Concern*

Bad Influence	1	Integration	1
"Mrs. I"	1	Jealousy	1
Culture	2	Language	2
Culture (Losing and Selling)	1	Laziness	1
Discourage	1	Parents and Education	1
Discrimination	3	People (Getting along with)	1
Drunks	2	Personal Life	1
Education	4	Political	1
Farmer	1	Sex	1
Handyman	1	Teachers	1
Hunting - Culture	2	Teachers and Parents	1
Hunting Guide	1	Tradesmen	2
Identity	1	World Affairs	1

* The final step was not completed with Family I.

Categories Common to the Families

Two people* independently examined all of the cards in all of the envelopes to form common categories. The table on page 41 indicates those common categories which are of immediate interest and concern to the families. Of most immediate interest and concern for most families are education, heritage and culture, and family.

Miss Trippe-de-Roche and I were concerned about our influence in the conversations. Did families discuss certain topics with her and others with me? The typed recollections were examined to see what was actually discussed during each of the three conversational visits to the families, the first of which involved myself, the second Miss Trippe-de-Roche and myself, and the third Miss Trippe-de-Roche.

Examination of the typed recollections appeared normal, with many of the families bringing up many of the topics on all three visits.

Processing Information

As a form of validation, the cards that had been made into the fewest number of categories (e.g., six) were exchanged with the cards that had been made into the largest number of categories (e.g., 39), with the permission of Family C and Family D. The intent was to see how many categories each family would make with the other family's card.

Family C made six categories with their own data and ten categories with the other family's data. Family D made 39 categories with their own data and 37 categories with the other family's data. This result was expected, the assumption being made that processing information is not largely affected by whose information is being processed.

*The first examination was made by Mrs. Pauline Hobbs, graduate research assistant, who is white, and the second examination was made independently by Miss Georgina Trippe-de-Roche, a treaty Indian from Fort Chipewyan.

Topics of Immediate Interest and Concern to the Families

Common Categories	Family A	Family B	Family C	Family D	Family E	Family F	Family G	Family H	Family I	Totals ✓	Totals X
Education	✓	✓	✓	X	✓		✓	✓	✓	7	1
Heritage and Culture	✓	✓	✓	✓	✓		✓	✓	✓	8	
Family	X		✓	✓	✓		✓		✓	5	1
Indian Organizations	✓		✓	X					X	2	2
Discrimination	X	✓	✓	X					X	2	3
Integration and Segregation			✓	✓	X			X	✓	3	2
Employment	✓	X		X	X			X	✓	2	4
Treaty Rights	✓	✓		X	X					2	2
Personal Concerns	X			X				✓	✓	2	2
Language		✓					✓		✓	3	
Religion	X			X	X		✓			1	3
Social Status				X				X	✓	1	2
History	X			✓						1	1
Communication	X						✓			1	1

✓ - indicates "of immediate interest and concern" X - indicates "of lesser interest and concern"

[1]Family F did not continue beyond the first conversation for reasons of a personal nature

[2]Extrapolated from cards and categories made by Family I

Below are the categories made by the two families of their own and each other's data:

Family D Categorizing Family C

Own Data		Other Family's Data	
Arts and Crafts	1	Advancing	1
Culture	1	Business (Lack of Understanding)	1
Friends	1	Canadian (Being)	1
Geneology	1	Comments	1
Grouping	3	Confusion	1
Heritage (Return to)	1	Dominate	1
Historical	2	Education	5
People	1	Education (Lack of)	2
Togetherness	2	Environment	1
Tradition	1	Experimenting	1
Aboriginal Claim Lands	1	Expose	1
Assimilation	3	Fact	1
Control	1	Grown-Up	1
Debt (bad)	2	Heriditary	2
Demonstration	1	Identification	1
Discrimination	1	Information (Lack of)	2
Education	7	Intention	1
Emotional	1	Job Opportunities	1
Health	1	Laws	1
Indian Lands (Extinguishing)	1	Leader of an Organization (Lack of ability to be)	1
Integration	1	Misinform	1
Law	2	Native Language not used at home	1
Luxury	1	Opinion	3
Militant	1	Parents Responsibility	3
Misunderstanding	1	Pity	1
Opinions	2	Prejudice, Reverse (Indian (Prejudice)	7
Organizations	3	Prejudice (Reverse white (Prejudice)	2
Politics	1	Problems	1
Programing	1	Religion	1
Progress (toward white culture)	2	Sacrifice -- (feeble effort)	1
Progression	2	Self-conscious (2)	2
Recognition	2	Self-Responsible	1
Religion	3	Starting at bottom of ladder	1
Research	2	Support	1
Resignation	1	Tradition	1
Retracting Support	1	Values	1
Segregation	1	Weakness	1
Transition	2		
Viable Operation	1		

Family C Categorizing Family D

Own Data		Other Family's Data	
Discrimination	14	Culture	8
Education	8	Education	5
Home Life	6	Government Intervention	4
Indian Culture	6	Land Transactions	2
Integration	13	Personal Gain	11
Politics-Indian Organizations		Personal Theory	15
(On 11 cards, Family C said the wordings were changed, and these were placed in a separate envelope)		Politically Prejudiced	7
		Religion	1
		Treaty Rights (forfeit)	7
		Untrue statement	5

These findings, and others, are discussed in the final chapter.

CHAPTER V

DISCUSSION

During the latter part of 1971 and through the middle of 1972 I visited Indian families to learn their views and feelings in regard to education, culture and related matters. The families that were invited to participate reflected the following variables: treaty, non-treaty, Indian, Metis, age of children, mixed marriage, and varying levels of income. Wherever possible, the conversations took place in their homes and, with one exception, each family was visited four times to categorize the data. Tape recorders, or similar contrivances, were not used during the conversations but, afterwards, each conversation was recollected onto a tape and then transcribed. The families categorized the data themselves and then the data were further analyzed to cull common categories.

The reader should bear in mind in reading these recollections, that this study involved nine families and any similarities between these families and others may be purely coincidental; in statistical terms, no attempt should be made to generalize to other families. But the reader will find many useful observations and commonalities.

The following selections are representative of the recollected conversations.*

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*The complete typed recollections of the interviews with the nine families total 112 pages; those researchers who are interested may obtain them at cost from Allen Berger, the University of Alberta Education Centre, Edmonton, Alberta, Canada.

Education

Uppermost in the minds of the families was "education," which was brought up far more frequently than any other topic in the conversations. Seven of the eight* families also cited this topic as one of immediate interest and concern to them - (the only family that indicated education to be of lesser interest and concern is the only family with all children grown up and employed).

> . . . . that the teachers should be good people. The topic of teacher aides came up and she said that it was a good idea to have Indian mothers as teacher aides.
> - Family B

> . . . it is important for the Indian children to have Indian teachers. It is important for them to have models. . . . even if the administration of the school is bad, the place to start is with the teachers. Even if the person has a grade eight education he still knows more than a grade one person and should be able to teach grade one.
> - Family D

> They also felt that the school could do a better job of transmitting culture. Indians were presented in so bad a light, Mrs. E said, observing that her mother and grandmother moved from place to place with the family in an effort to earn a living: she did not know of Indian people who went around looking for fights; but, she pointed out, this is the impression you get from textbooks. She also said that white people could do a good job of teaching Indian children just as much as Indian people might do, but it would all depend upon the white people involved.
> - Family E

> Mrs. E spoke highly of the teachers. She said that one of them is extremely good because she had taught in an Indian school and understands the Indians and spends a great deal of her time outside of classes teaching the children music lessons.
> - Family E

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*One family declined to continue the conversations for personal reasons.

One thing she does not like is separating the class into two groups: the slower ones and the fast learners. This creates inferior feelings among the children, she said. Perhaps it's done because of the large class, but whatever the reason for it she felt that it wasn't good. The oldest boy . . . tells her that no matter how hard he tries he still doesn't get to the first group.

- Family E

She is very interested in education. She asked Dr. Berger a lot of questions about his teaching and the kinds of methods he uses for exams. We told her of one of the schools in the city where we visited his student teachers (on the way to visit one of the Indian families) where there were three grades in one large room and how the children were lying around on the carpet floor in groups, etc., and she was very amazed and commented how things are changing these days.

- Family F

In regard to education he says he feels very strongly. He says that Indians must gain control over their own education. He mentioned New Start, where there were twelve families, and at the end only one remained. He mentioned the problem of families in New Start being separated for a year, with some of the Indians never having been away from home, and the Department of Indian Affairs made the people live in separate places around the area. He mentioned problems that white people just do not seem to be aware of; for example, he told about a man who lived at one end of town, and his friend, who was required to live at the other end of town; they were going to meet downtown. This one man got on the bus and did not know how to get off the bus; finally, the bus went through town and way to the end where the bus line ends and the the man had to walk all the way back and it took him about three hours to get back to where he was supposed to meet his friend. It is problems like this one that directly affect education, and these problems white people seem to be unaware of.

- Family F

Mrs. G. said that the TV has help a lot for her children's education; they pick up English and learn about other people as well.

- Family G

She said that people should have come and talked to them about education a long time ago. Education is so important today . . . . A few years ago nobody paid any attention to whether an Indian dropped out of school, but now it's different because more and more people are trying to find out why the Indians are dropping out of school.

Family G

> . . . teachers would be welcomed in many homes but the Indian people are shy and so the teachers must make the first move. The teachers should take the initiative in expressing interest in visiting homes. She mentioned one teacher who sent notes home expressing his interest. The children gave the notes to the parents and some of the parents actually invited him to come and visit with them.
>
> - Family H

> She spoke highly of her own education in church schools. She said that if she had not gone to those schools she would not know how to play the piano and organ.
>
> - Family H

> I asked her what she would do if she had all the power to change the school system, books, and everything that is connected to education. She said that the first thing that she would do is hire Canadian teachers who are familiar with the Indians.
>
> - Family H

> He brought up the topic about the computers that are being used in schools in the States. He said that he would prefer a computer rather than a teacher because not everyone can learn from a teacher. He said some children don't learn from teachers because of personality clashes and so on. He mentioned the program that he saw on Channel 11 where a child was using a machine like a typewriter in English class. He said the machine tells the child to press a certain letter and all keys are locked until the child presses the right letter. He said this type of education is good because it's also fun for the child.
>
> - Family I

Heritage and Culture

The families referred to "heritage and culture" more times than any other topic, with the exception of education. Eight out of eight families said that this topic was of immediate interest and concern to them.

> She spoke also about feathers which are supposed to be in the homes of the Indian people. She said that many Indian people have these in their homes, but some do not for various reasons. She did not have feathers in her home. The point she was making was that if these customs are made known to white people, then several things may happen:

the Indian people who believe in the religious value of these customs may get upset; secondly, white people might laugh; and thirdly, the children themselves may think that the customs are strange. She said that her own children tell her not to take the customs seriously.

- Family B

I spoke about the religious value of feathers in the home, which Mrs. B had also mentioned. Mrs. C did not seem to know about having feathers in the home and indicated that, even if she had known, she would not have had them except to dust with. I said that every group has its own customs, and I really didn't see any great difference between having feathers in the home or putting a little mezuzah on the side of the door or wearing a religious medal around the neck.

- Family C

I asked specifically about the Sun Dance. Should not Indian people know about such things? Mrs. C said that there is no reason for them to know about it. She said that it was a form of entertainment. Jo Ann interrupted and said: "Entertainment! The Sun Dance?" Jo Ann spoke about the religious value of the Sun Dance, but Mrs. C said that it had nothing to do with religion as far as she was concerned. It might have something to do with a way of life, she said, but it did not have any religious value. We spoke along those lines and the general feeling expressed by Mrs. C and her brother-in-law was that you have to do things that are valuable to get along in a white man's world.

- Family C

Mr. D. feels that culture should play a secondary role. Indian people should know what has gone on in connection with Indians but it is something that should not be of primary importance in their education. He suggested that too much emphasis on culture will be a detriment to the Indian. He said, for example, it is hard for an Indian person to become involved in society as a whole if he is too strongly attached. He gave as an example the fact that he had to give up certain things, such as his Indian religion, in order to make his way in the city.

- Family D

. . . he used some medicine while we were there. The medicine was Indian medicine, which he sniffed. He said that he had a heart attack five years ago, and other problems, and doctors could not help him, but the Indian medicine has made him completely healthy.

- Family D

> In regard to Indian culture, Mr. D's feeling is that it is a luxury. He can afford it now and that is why he has many things relating to Indian life around.
>
> - Family D

> I noticed that they didn't have any Indian crafts in their home. She said that she is very interested in Indian culture but she does not go all out like some people do.
>
> - Family E

> Her husband came home about 3:00 and engaged in the conversation. He is quite dynamic and he has many ideas on a variety of topics. He is a hockey player and played in Edmonton professionally for many years but he quit to farm his father's land. He also acts as a guide and is quite disturbed that there are only about 100 Indians in all of Alberta, he claimed, who hunted for their own food. He brought this up in connection with our discussion of Indian culture and said that he feels hunting is an important part of the behavior and few people hunt. He said that he takes his whole family out hunting to get away from everything. He said that many Indian people simply eat the food that is given them from the government. He criticized the government for allowing so many Americans to hunt in Alberta for sport.
>
> - Family I

> There was discussion about Indian culture and Mr. I mentioned Joe Saddleback, who is teaching Indian culture at the Ermineskin School. Mr. I felt that even though the children might learn about their culture in school it had little value for the children. As he put it, an Indian cannot set up a teepee in the city and cook bannock in the open fire like in primitive times. He said that an Indian has to live like the rest of society and he added as a joke that one culture that an Indian will never lose is laziness. He teased his wife about her not knowing how to thread a needle or cook bannock. Mrs. I said that it's true that she doesn't know how to cook bannock or make handicrafts but she does use a needle once in a while.
>
> - Family I

Family

Rated high with education, heritage and culture was "family," with five of the families indicating immediate interest and concern.

> Mrs. C spoke a little bit about her marriage and said that she is determined to make it work. Her husband, who is white, works at three jobs. Mrs. C said that she gave up

the Indian ways; that is, she made a decision when she got married and, in effect, that decision involved living in the white world. - Family C

. . . the youngest boy turned on the television and Mrs. E told him to turn it off because she was talking and the boy turned it off without hesitation. It was obvious to see that the family had a warm relationship and the children are disciplined. She showed us a card drawn by her daughter in school, which read, "I love you, mother," and another one drawn by her oldest son, a paper which had drawings of cars and different animals on it, and she said that he is very good at drawings . . . .

- Family E

The oldest girl came up from downstairs and complained that she was hungry and Mrs. E told her to wait. Her father kidded her and told her that she didn't need to eat because she was fat enough. The girl giggled and left the room.

- Family E

We talked in the living room. The carpenters were putting cupboards in the kitchen, and it was rather noisy. The children were peeking at us shyly from the kitchen, and once during the conversation the children went through the living room to another room, making noise; Mrs. G told them to be quiet, and they were. The children appeared to be happy and healthy, but rather shy. We said "hi" to them and they hid their faces and didn't say anything. Mrs. G is also shy and rather a serious person. She apologized for not speaking English too well. I thought her English was good because she was expressing her opinions clearly, and I told her that we understand what she was saying and that was the most important. - Family G

After the introduction, Dr. Berger explained the project and Mrs. G seemed interested although I had the impression that she did not really understand what Dr. Berger was explaining. I suspected that she thought we had something to do with schools because she kept bringing up the subject about her boy who had been a pupil at Victoria Composite High School in Edmonton, and she wanted to know how he can return for this semester. She was really concerned about her children's education. She talked quite a bit about her son . . . . - Family G

Indian Organizations

During the year of the conversations there was considerable activity involving the area indian organizations. The President of the Alberta Indian Association was engaging in battle with Minister of Indian Affairs Chretien. Indians from three, then two, bands were sitting in the Edmonton Office of the Department of Indian Affairs on the 27th floor of the CN Building. The Voice of Native Women moved its offices from Edmonton to Lethbridge. The Native Communications Society had internal problems which burst into the open when staff walked out and door locks were changed. The Native Friendship Centres, in Alberta and other parts of Canada, were pleading for additional funds from band councils and government agencies in order to continue to be of service to the people.

> Mr. A expressed the view that Indian Affairs is engaging a policy of cultural genocide. I asked why he felt that way and he indicated that they are doing things which are devastating to the Indian people. He said that they are trying to do away with treaty rights and are engaging in policies to undermine the treaties. He gave, as an example, the use of Indian reserve land by Indian Affairs to set up businesses such as that set up at Saddle Lake Reserve. He suggested that this was done without consultation with Indian people. He also expressed the view that Indian Affairs is trying to prevent their being phased out within five years by making other organizations look bad. He said that the other main organization is the Alberta Indian Association, and he said that the Alberta Indian Association is blocked in every way by Indian Affairs.
>
> - Family A

> . . . there are about ten or eleven organizations connected with Indian groups in Edmonton and there is a great amount of jealousy. She also said that there is considerable militancy among the younger people; some hate white people.
>
> - Family C

> . . . it takes time but, gradually, the native people are taking control of the Department of Indian Affairs.
>
> - Family D

Discrimination

When the families spoke of discrimination, it was usually within an educational context:

> I managed to talk to the girl for a few minutes about school. She said that she gets along well with all the kids in school, and she hasn't encountered discrimination at all. Mrs. B interrupted and said that the Indian students form their own groups because they are not accepted by the white kids and they even form their own all-Indian teams for basketball, etc., in schools because they are not selected by the coaches as players.
>
> - Family B

> Mrs. C brought up the topic of discrimination. . . . Until she got to the eighth or ninth grade, she did not know anything other than being and living with Indian children. It wasn't until she went to another school where most of the kids were white that she felt discrimination. She had said earlier . . . that many Indian children do not do well in school because they are made to feel inferior. She said that other children look at you as if you are strange. In a way, she said, they did look different because the nuns had them cut their hair short and they wore bulky stockings (or woolen stockings or whatever they are) and, in general, did not dress other than as the nuns suggested. I asked her if the teachers discriminated; she said no, but none of them really went out of their way. She said that there was one really good teacher; she recalled his name, and said that he would walk over to the Indian students and chat with them, and make them feel good. She said that none of the other teachers, though, ever approached the Indian children.
>
> - Family C

> I asked if he felt an Indian could become the Prime Minister of Canada. He said no but the reason was that there were no educated Indians. (Mrs. C was sitting quietly.) I said that was not really true; there are quite a number of Indians with a considerable amount of formal education. I specifically mentioned Joe Couture, who just finished his doctoral degree. He said that he was not aware of Joe Couture. . . .
>
> - Family C

> He told us about one of his children who had come home from school and asked if she was an Indian and what did it mean to be an Indian.
>
> - Family I

Integration and Segregation

The conversations with the families indicated a keen awareness of their relationship with the white community.

> Mr. and Mrs. A are the only Indian people living in that particular area. I asked them if their neighbours had ever said anything. Mr. A said "no" but, during the very first month, he could feel everyone watching.
>
> - Family A

> He left the reserve when he was about seventeen and came to stay with some relatives or friends. Three days later he was in jail. What happened was that his friend stole thirty-five dollars from somebody and the police picked them both up; Mr. D said there was no trial in a courtroom but in some other little room or office and it was decided that, even though his friend kept saying that D had nothing to do with it, the boys would be sent to jail for six months. Mr. D said he learned a great deal in Fort Saskatchewan. He said that some of his early friends left for the U.S., and some were looking to join with Al Capone.
>
> - Family D

> Last week Mr. D was involved in giving a headdress to Kosygin, who was visiting Canada. (Mr. D said he is an Honorary Chief of the Samson Band.) He said that a great deal of discussion and thought was given to this act. He said that the Indians never segregated anyone and that it was their belief that everybody should be accepted warmly.
>
> - Family D

> Dr. Berger mentioned the view of an Indian person who believes that Indian children should remain in Indian schools forever or till they are ready to integrate to other schools. Mrs. E felt that this was not good for the Indian children; it is true, she said, that an Indian child feels more at home with all Indian children in school, but a child at an early age should integrate because there is no way of getting away from the white people. . . .
>
> - Family E

Employment

The Indian families were no exception to the general concern about the employment situation in Canada.

> Some Indians really made her mad because they won't admit that they are discriminated against in jobs. The Indian

people are usually given the dirtiest and the hardest tasks on jobs and they never complain and if they do the chances are that they'll get fired so what chance does an Indian have if he wants to get ahead or tries to get a loan to get in business, and so on. - Family C

We talked about a few other things and she mentioned that she has worked with the Compensation Board for a year and a half. She said that, although she was qualified as a stenographer, she was given only typing to do. She said that every time there was an opening for a higher position it was given to the white women. She also mentioned that one of her girlfriends applied for a steno job because there was an opening and she did get a job but it was to do filing, even though this girl had her diploma in stenography. She quit when she got married and didn't plan to work again. - Family C

She said that she hardly knows any Indians that have completed university or college, although she knows many who are nurses' aides. Many of the Indian girls are working in offices in the city. She said many of them leave the reserve because of lack of jobs and "nothing to do" on the reserve. - Family E

Mr. F is one of the people who worked for the Alberta Indian Association and who lost his job when things did not work out too well for President Harold Cardinal. He said that Cardinal mentioned to him on the previous evening that Indian people are no longer in a position to help Indian people. White people are in a better position now. - Family F

Mention was made of Mr. A, and Mr. F said that he now has a job working for Northwest Industries. Mr. F is trying to live through the sale of his paintings; they are being sold from $7 to $70 plus a little bit extra for the frames. - Family F

The temperature was 40 degrees below zero. We were driving down the long road to their house and we passed a man walking and carrying an axe. We were just getting seated in the living room when we asked if that was her husband that we passed on the road and Mrs. G said it was and that he had several miles to walk to work to cut trees in the Winter Works Project. - Family G

. . . twenty years from now the Indians in Canada will be treated like the Negroes in the States. . . . He said the whites don't want the Negroes to be educated because they would take the jobs from the whites. He said it's the

same here; the whites don't really want the Indians to be educated because the Indians are supposed to be on reserves.
- Family I

Treaty Rights

One of the families was directly involved in the fight for Indian women married to white men to regain their treaty status; the direct involvement (of the wife) took the form of gathering some 3,000 names for petitioning to Ottawa, speech-making, newspaper interviews, etc. While this activity is in line with the Women's Lib Movement, there was a sizeable silent opposition largely of people concerned about the effects that such a change would have on the reserves. Other people questioned the advisability of changing portions of the Indian Act and indicated the balance between the Indian Act to the Canadian Bill of Rights.

There is a petition being passed around for treaty status. At present, there are about one thousand Indian women who are married to non-Indian or non-treaty, she said, and they expect more names to come in from all the bands. She was interviewed on television last week, and she said that she didn't make a good enough statement when she was asked the reason for fighting to get the treaty rights back. She had told the interviewer that they only want the benefits of the free education and medical, not to go back to live on the reserve. She said that she had lived too long in white society, and would not live comfortably on the reserve again.
- Family B

Somehow we got on the topic of Treaty Rights and Mrs. C said it was okay with the present system because an Indian woman marries a white man with her own free will but, on the other hand, she was not in favor of a white woman marrying a treaty man because they take advantage of them and once the white woman gets into a reserve they start running the show. She mentioned one incident about one white woman who married a treaty guy while she was training to be a doctor and she divorced him after she finished her training for a doctor and her training was paid by the Indian Affairs. She married a white man shortly after that.
- Family C

We also talked about the Indian status and whether it was fair both ways for Indian women who marry non-Indians to lose their Indian status and rights in their band. Indian men, though, who marry non-Indians retain their status; wives in these cases become Indians under the Indian Act. We asked Mrs. E whether men and women should be treated alike in this situation, and she wasn't sure about it. She said that when a person marries out of the reserve he or she is franchised by the band and only the band can decide whether he or she can obtain status and rights, but this person can live on the reserve but cannot receive the benefits from the oil rights till he or she pays back the money.

- Family E

Personal Concerns

. . . the nuns never told them anything about sex. They made the young people feel that their bodies were sinful, and she grew up in relative ignorance about sex. She said that her mother often spoke in favor of having sex education in schools and she even brought it up at one meeting of parents and teachers. That apparently caused a considerable amount of excitement. I said that her mother was quite a number of years ahead of her time. Mrs. C agreed. The people, or some people, said that sex should be taught in the home, but that her mother pointed out that even the parents had never been taught anything about sex so how could they relay any information on to their own children.

- Family C

Mr. D said that the reason the people end up on 96th Street is because Indian people like to group together. There are many people, he said, on 96th Street, and this is the place for the new people to congregate. Even if an Indian person gets a nice apartment he often is visited frequently by friends and relatives. He said that one of his friends had an apartment in the building and, every time he went to see him, he saw Indians all over the place. This particular person did not know what to do and eventually he went back to the reserve. Several times during the evening Mr. D pointed out that he never really moved too far away from where he first lived in Edmonton: only two or three streets away from where he used to live. He said that he has moved up (to the 25th floor) rather than horizontally (to the suburbs).

- Family D

Winterburn Reserve is about five miles outside of Edmonton and is, in a sense, a suburb. I asked Mrs. E why she and her husband remained on the reserve; she said it was because of the housing and other services, including

protection. I asked her what she meant by protection, and she said that if they ever got into any kind of jam, they could talk to their leaders, but to whom could they go in the city: the mayor? - Family E

The only thing that limits their life is the problem of getting a loan from banks. They get turned down when applying for a loan when it is learned that they are living on a reserve. The explanation is that a person living on a reserve does not own the land or the house so the bank cannot give them a loan. Mr. F experienced this when he tried to get a loan from the Department of Indian Affairs to buy a school bus. Mrs. E said that loans are available through the Reserve Band.

- Family E

. . . she stays awake at nights worrying about her children's future. She sees the other young people dropping out of school, the majority of them at grade nine. These young people wander around the reserve lost and she sees them drunk on the streets in Wetaskiwin, she said. She said it's very frustrating to see them in this kind of situation. There are also many attempted suicides and many of them succeed. Her nephew, who is about 20 years old, attempted suicide not too long ago, she said; luckily someone found him and cut the rope in time.

- Family G

The topic of suicide came up and Mrs. I said that it was a very bad problem. She said about ten people had killed themselves one year and two brothers did so in one month on the reserve. Hanging seems to be the most popular form of suicide. She said that suicide exists to a large extent because there is nothing much to do on the reserve.

- Family I

He said that it frightens him about the world today. There are wars all over the place, even among the band councils. . . . He wonders if it is wise to bring any more children into the world with all the wars and drugs. He said that young people today think that they know everything; things sure changed from the time that he was young, comparing it to today. He said that he was taught by his parents to respect the elders, and he had to eat last when his parents had company for dinner. He also criticized the people in Ireland and he said: "Is this Christianity?" He also criticized the behavior of Trudeau and Stanfield on how they are fighting each other in a childish manner to win power. - Family I

Language

While only three families specifically made categories relating to language, nearly all of them expressed interests, concerns, and opinions about this topic in their conversations.

> . . . many children speak half English and half Cree; that is, the children know English but they don't know it very well and they also know Cree but they don't know that very well either. Another problem that she pointed out was the fact that there are many teachers from other countries and they do not speak English clearly.
>
> - Family H

> Earlier in the conversation his wife said that the children go to school off the reserve because she feels that they should know how to get along with white people. Mr. I, however, expressed the view when he came home that (and he said this to anybody) that the children go to schools off the reserve because there are so many foreign teachers who cannot speak good English at reserve schools.
>
> - Family I

> A funny thing happened while I was removing my boots in the porch; I guess that Mr. I had forgotten that I understood Cree, and while his wife and I were exchanging a few words, he was telling the two guys that I wasn't a bad looking chick and so on. I didn't let on that I knew what he said to avoid embarrassment.
>
> - Family I

> . . . she said that she did not understand why the French language had to be learned in the separate schools. French might be replaced by other languages more meaningful. . . . She said that children should have a good understanding of English before entering grade one; otherwise they'll be at a terrible handicap. This does not necessarily mean that the Indian language should not be spoken in the home. "It just simply means that if the child only knows one language, he should know the Indian language, but it would be good if he knew two, with English the second."
>
> - Family A

> We started talking about children learning languages, and Mrs. J., who was of an undetermined age, said that very few or relatively few Indian children speak native languages. We talked about this for a while and her feeling was that parents are smarter today in the sense that they realize that children are at a disadvantage when they enter school if they do not have a command of English.
>
> - Family C

> . . . we were joined by Mrs. E's mother. She sat at the far end of the table, and she mentioned that when she went to school the nuns would not allow her to speak Cree. I asked her if she knows Cree now; she said she can "manoeuvre" in Cree but apparently her daughter understands it as well if not better because her daughter was allowed to speak it when she went to school. Mr. E, however, is Cree but he cannot speak Cree at all. . . .
>
> - Family E

> . . . Indians should teach native languages in school because the whites do not pronounce the words properly.
>
> - Family E

> We spoke about whether an Indian child should learn his native language first or English. She said that she teaches her children both Cree and English. (While I was there she spoke to the children, half in Cree and half in English.) She wants them to know English before they start school so that they won't have too much problem in their first years. . . . She said she definitely thinks that every Indian child should know his native language because it is part of the culture, but they should also have good English. - Family G

Religion

The Indian religions play virtually no part in the lives of the families having been replaced for most families by Catholicism.

> Mrs. A commented on her schooling and said they prayed fourteen times a day. I thought this was rather remarkable. She indicated that they prayed when they got up. They had mass before breakfast, they prayed after breakfast and on through the day. They also prayed for the Pope and they prayed for the Communists. She mentioned an arithmetic teacher who had come from Toronto who, she said, "was a real fanatic." Every so often during the day, after they finished their arithmetic, they would have to get on the floor and say some prayers. She said that they also prayed for being sinners. She said she doesn't know how they could possibly have sinned except for the possible sin of everyone thinking they should kill the head nun. - Family A

> She told of a time when she had been in somebody's home and a nun was telling the other people how much they had done for the Indians and how the nuns and priests have gone North without the Government's help and "civilized

the Indians," and how God was "brought to the Indians." We had our own God, our own religion, Mrs. A said. "I was about to tell her off, but I was in somebody else's house, so I did not do anything," she said.

- Family A

. . . he critized Christianity. He was particularly critical about what happened to the Irish girl who was tarred in Ireland. (Her picture was in the front page of that evening's paper; she had been tarred because of her involvement with a British soldier.) The next day was Remembrance Day, and he said that he would prefer to remember the good things. Look ahead, not back: he felt there was no great need to observe Remembrance Day.

- Family D

Mr. E said that just about all the religion as far as Indian people are concerned was gone. He expressed concern, as did his wife, about the number of times prayer was required when they were going to school. He said that sometimes they got out of going to church by going to the bathroom and a number of boys would stand on the toilet seat so that their feet would not be seen and they would be able to hide from whoever might look to see if anyone were in the bathroom. He said that at other times the boys ducked into the bushes to avoid going to church.

- Family E

. . . many parents were upset when religious symbols were removed from the walls of the school and only left the pictures of the Queen. (She has a picture of the Queen on her wall.) She said that the parents would all like Roman Catholic religion taught in school and also they would prefer Roman Catholic teachers. I asked her whether they would allow a teacher who is a Roman Catholic, but does not like children or is not a good teacher, to teach their children. She thought for a while and asked her son, Melvin, who is about 14 years old, and who was sitting on the couch, to answer the question. He said that he didn't care whether a teacher is Roman Catholic or not as long as the teacher is a good person and a good teacher. She said that she was involved in a survey last summer. This survey was to find out if the parents wanted religion taught in school. The findings were that most of the people were Roman Catholics with just a few families of other religions. I asked her what were the children's opinion in regard to religion. She said that they don't want religion taught in school. The school sent a letter home with the children for the parents to sign "Yes" or "No" if they wanted religion taught in school and she said that the children didn't show it to

the parents and they signed it not in favour themselves. She commented that religion was a problem all over the world, particularly in Ireland.

- Family G

We spoke about the meaning of Sun Dance. She said it is supposed to be a religious ceremony lasting four days. The purpose of the Sun Dance is to give thanks for everything, such as health, and to ask favours, she said. She goes and watches but does not take part in the ceremony because, like her ancestors, she is a strong Catholic, she said. She said more and more people are turning away from the Catholic Church on the reserve, but she has no intention of participating in the Sun Dance because she won't be a faithful Catholic. Religion makes a better person because the Ten Commandments are hard to keep, but they guide your life, she said.

- Family H

Social Status

Mr. D had lunch with some of the Russian people; he was asked how one became a chief and if the chiefs have a lot of money. Mr. D laughed; he replied that he goes day by day. "It is a question of doing something for the people," he told the person from Russia. He was asked if he would like to visit Russia. He said that he would very much like to visit Russia, and he said that the man made a note of this.

During the conversation he mentioned about meeting royalty in Fort Providence. He showed pictures of him and the Royal Family, and of himself and his wife and Senator Gladstone. Mr. D was wearing a Metis cap, which looks like a Davy Crockett cap.

We stopped at Chief Maurice Wolfe's house to get a signature for the headdress that they were sending to Russia. Mr. D said that he deals directly with the four chiefs of the Hobbema Reserve so he knows them personally and he spoke highly of them. He said that he likes the way Chief Wolfe operates. He knows what is best for the people and negotiates with the government authorities.

- Family D

. . . he gives a lot of credit to hockey for being the kind of person he is today. He said that it does not make any difference to him if he is in the company of rich people or poor - he gets along well with all kinds of groups. He

mentioned several cities that he's been to, while playing hockey, and he had a chance to go to Europe as well.

- Family I

History

Mr. D brought out some very large maps of family trees he has been working on for the last thirty years. The maps were extremely impressive. The lines of families interconnected into geneological trees, and he pointed out how many families were related to other families; he indicated a relationship between Harold Cardinal and Kahn Tineta Horn.

He spoke a bit about the Metis. He said that the Metis have more land than the Indians of Alberta. He said that some land was sold to or by a church and there was some kind of deception involved. The person that he mentioned was Father Lacombe. He said that the Church told the Indian people that Ottawa wanted the land back so it was sold very cheaply. He was looking through old information in the Archives and found the record of another actual transaction where this same land then was sold to someone else for a quick profit.

He said that Louis Riel was fighting for the Whites, not just for the Metis. He mentioned that all the people around Lac La Biche at that time were white. There were to be reprisals if people did the wrong thing in connection with this particular moment of history. He showed some books to Georgina to read on Riel.

- Family D

Dr. Berger asked Mrs. E what changes would she make in the present school system in regard to the curriculum if she had any choice or power to do so. She thought for a while and said that there is a need for Indian history to be taught in schools as well as Indian language starting from grade one. Such things as the population of Indians in Canada, how many different races, types of languages - all should be in history textbooks.

- Family E

As we sat down in the restaurant, he commented that some scholars say that Indians have a closer relationship to Chinese people than to white people. (We were in a Chinese restaurant.)

- Family F

Communication

The need for increased communication was cited by some families.

> He said that he would be very pleased (he said this voluntarily) to come and talk to the people in my university class because he feels that communication is very important.
>
> - Family A

> He mentioned again that the Alberta Indian Association was going in the wrong direction. He said that the Association should focus mainly on education. I asked him what specific kind of education should the Association get involved in, and he said that it should be an Information Centre, such as advising the students what courses are available and where to obtain financial support and other things like educating people about the laws and the economics on reserves.
>
> - Family D

> Both Mr. and Mrs. E expressed the view that there was no generation gap among the Indian people. The explanation given was that many reserves are like small communities and lots of the doings involve all the people.
>
> - Family E

> I asked if the teachers know much about Indian culture and she said there was a big gap between the teachers and the rest of the community. In fact, she said, there was a big gap between the working people and the non-working people on the reserve.
>
> - Family H

CONCLUDING STATEMENT

Bowed by the weight of centuries he leans
Upon his hoe and gazes on the ground
The emptiness of ages in his face,
And on his back the burden of the world. . . .

- Beginning passages from
"The Man with the Hoe."

When I came to Canada five years ago I saw Indians standing around on certain streets, and street corners, in the poor section of the city - and the scene was reminiscent of similar scenes involving Negro men in the poor sections of cities in the United States.

The white people to whom I spoke about these street corner scenes provided me with explanations such as laziness, drunkenness, inability to get along, lack of intelligence, etc. Yet these explanations did not seem to ring true. For I had spoken to many of these men and women "of no fixed address," to use the popular newspaper phrase, and many of these people are highly intelligent; the mere fact that they are able to live and survive each day indicates a certain degree of intelligence, not to mention the depth of understanding and awareness that many of them possess of people. So great is the understanding of some of these people, in fact, I began to wonder about the benefits of formal education, for I had no doubt that among these people were some who, with only a little guidance, could become highly effective counselors,* teachers, etc., perhaps even more effective than many who are engaged in these occupations. Some of them might even do a far better job than is currently done by many psychiatrists. In fact, as a personal aside, some Indians, with the aid of their medicine men, would probably have a higher rate of success than

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*Studies by Charles Truax and other investigators support this observation.

some highly trained psychiatrists who do little more than push pills and relieve feelings of anxiety through mental exercises. So lack of intelligence, I was certain, was not an accurate explanation to the street corner scenes.

Drunkenness seems to be a very popular explanation, and the phrase, "drunken Indian," has taken on the status of a collocation in the English language. One recent best seller actually was entitled Nobody Loves a Drunken Indian (and made into a movie call Flap.) But drinking is a serious problem among whites as well as Indians; the last figures that I saw several years ago indicated that there are now more than five million women who are alcoholics in the United States, and there are many white women in Canada as well as the United States who, if phoned at any hour of the morning or afternoon, would stagger across the shag rugs in their plushly-furnished homes. As for men, it is no secret that many of the major corporations on this continent have set up facilities to help their alcoholic employees whose inefficiency results in staggering economic losses to these corporations. As a relevant aside, many of these same corporations have also set up facilities to combat drug abuse by their employees, according to reports in recent issues of Business Week. I do not wish to pass judgment on these people; I merely wish to point out that the drinking problem is enormous among whites, but one doesn't usually hear the phrase, "drunken white." Perhaps it is because they are less conspicuous. So I finally decided that I would talk to the Indians. I had to do this because when I turned to the so-called studies that had been done on them, I

had a difficult time trying to figure out what the writers were trying to say. Many called themselves anthropologists, and the more I read of them, the more I got the eerie feeling that they were engaging in a socially-approved way of peeking through keyholes; when they saw all that they desired, they disappeared, never to be heard of again, rarely returning any information to the portion of mankind that they studied.

During the year I learned a great deal from the Indians, and one of the main things I learned is that they are like you and me, concerned with many of the same problems which we are concerned. Contrary to the usual stereotype of the Indian being unconcerned with education, the families in this study talked more about education than any other topic. They saw education as the way to a better life for their children, and they desperately wanted them to succeed in school. One family was terribly distressed about one of their sons who dropped out of school.

But I also learned, in conversations with the families and others, that Indian people have special problems that directly affect their education. The boy who dropped out of school is illustrative of the many Indian boys who must leave the reserve after grade nine if they want to continue their education because reserve schools may not go beyond grade nine, and some reserve schools do not go beyond grade six. What this means, of course, is that these young people must leave their families and go off by themselves, live in a room in the city, and continue their education. This is a trying experience for many of these people because some have not been prepared for city life. They may be told which buses to take to get to their school, and how to return, but sometimes overlooked is the vital information about how to

get on and off the bus, or how to transfer to another bus. Some of the families indicated that the children may find a room with old couples who need the income but who also need complete and total quiet that few normal teenagers are able to provide, so problems often arise in regard to the homes in which these youngsters are placed. Often overlooked, also, is the fact that many Indians are very poor, sometimes owning only one pair of clothes, and so some children who go to school, in the cities or in small communities, often miss school on wash day. Many Indian people know these problems, but they are not in a position to influence changes, because they have very little control over their own education. In the Province of Alberta, which provides some of the best education on this continent, thanks in part to the province's wealth from oil and natural gas resources, it is not legally possible for many Indians to sit on Boards of Education.

I also learned that I had some stereotypes about Indians - and that some of these stereotypes had been reinforced by Indians themselves! When I went to hear Kahn Tineta Horn* speak at the University of Alberta, she told of her brothers who were high steel workers, and she indicated that Indian children must have an education that is connected with the outdoors - a geologist, a farmer, etc. On the same program was Chief Dan George, and several months later I had the opportunity to speak with him privately in a hotel room in the Banff Springs Hotel in The Rocky Mountains. I asked him if he agreed with Miss Horn;

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*Outspoken Indian woman, who several years back won the title of Princess in the Annual Canadian Indian Princess Pageant.

he was reclining on the bed, and he pointed to the desk in the hotel room, and said that she was right, and that he would be unable to sit at a desk for eight hours a day. Half a year later, I told the incident to John Downing, prominent British educator now teaching at the University of Victoria in British Columbia, the same province in which Chief Dan George lives. Downing fits the stereotype of the typical Britisher, cheerful, ruddy cheeks; I mention this because when I told Downing what Chief Dan George and Kahn Tineta Horn had said, he replied, "I wouldn't want to sit at a desk for eight hours either." And that's when it struck me: neither would I, and neither would most other white men I know. We spoke further and I was startled how I had associated Indians with the outdoor life completely neglecting to take into consideration that very few people - Indians or whites - want to be "tied down" to a desk for eight hours each day every day.*

So as we consider educational implications stemming out of this study, it is of extreme importance that we think afresh, and one obvious implication is the need to give Indian people more of a say in their education. At the Hobbema Reserve, while the conversations were going on with the families, there was a minor skirmish also going on in regard to the hiring and firing of some of the staff at the reserve's Ermineskin School. The Hobbema Indians felt that they were unable to direct their educational future, and were particularly upset over a "re-assignment" of a staff member, who happens to be white, but whom the Indians like at Hobbema.

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*While it may be stereotyped thinking to educate Indians solely for the outdoors, curriculum makers should not overlook the harmonious relationship which Indians tend to enjoy with nature, a relationship which is reflected in much of their talk and writing as well as in their lives. To overlook this relationship in this age of pollution-awareness is to overlook a vast wealth of resources -- to the detriment of Indians and whites alike.

With Indians more directly involved with education; they would be in a better position to point out some of the problems like the need to have a better orientation program for those children who continue their schooling in the city. They would also be able to more effectively question the hiring of foreign teachers who speak broken English. They could point out, as some families did, that it would be a good idea if teachers visited the homes of some of the children but that the teachers need to make the first move. On this point, incidentally, one teacher from the Philippines working at a different Indian community said that this would not work because the teachers in their community tried it and the parents refused them. On further questioning, however, it became clear that a carload of teachers came to the homes; even I might be fearful of having a bunch of teachers pile out of a car and come into my home. On this point is the fact that an Indian woman, who finished an orientation course this past summer and who now teaches at a nearby reserve, said that the people in the course were told not to visit the homes of the Indians because of the possibility that they might talk about "politics." I realize that this point of visiting homes is a controversial issue, but the fact remains that the wrong parents - Indian or white - tend to go to parent-teacher meetings, and the parents that do not come are the ones that must be reached, for the sake of their children. There also is the very important psychological fact that people tend to feel more

comfortable in familiar surroundings and most people would like to remain in their own homes than go to the unfamiliar and often imposing school building, where the teacher may sit in the front of the room while the parents all sit facing her the same way they did a long time ago. What happens in most communities - Indian or white or black - is that the teachers know very little about the people, neither the children nor their parents - and in some reserves the teachers live together in motel units and only one or two may make the effort to know a little about the culture and homelife of the families. This is the very same problem confronted by the great Negro educator Sam Shepherd when he became Assistant Superintendent of the Banneker School District, the toughest district in St. Louis. He asked some of his principals the names of people living across the street from their school, and when they said they did not know, he told them, so the story goes, that he can't make them learn their neighbors, but they can't make him keep them as principals. What strikes me about the Indians along this line is their openness to share, to accept white people, if they, the whites, only would make the first move.

The openness of Indian people to accept white people has many important implications for education. As the families indicated, they wanted their teachers, White or Indian, to know the Indian culture. This cannot be done by clustering in motels.

The influence of language on thinking and behavior is no secret. As long ago as the 1930's, Rudolf Carnap and B.L. Whorf studied the influence of language, with the latter observing its effects until the Hopi Indians. In our own study, we noticed some effects of language,

along with certain other factors, when two families processed each other's data as well as their own. It is imperative that fluency and flexibility of language behavior be developed, orally and via reading ability; if reading ability is limited, then a great vastness will be closed.

This report contains many other educational implications; for the reader's convenience, I have extracted some of the most relevant. Let me mention one last one which goes a bit - but not too far - beyond the data.

At present there is a growing interest in the culture and heritage of the Indians, and funds are being spent to preserve this previous heritage. The preservation of one's culture and heritage is of major value, and it is good that people know about their own culture, as well as the culture of others. But the argument is often put forth that, simply by knowing about one's ancestors, and customs, one will be a better person; there is a great deal of truth to this argument, but it must not cloud the very important fact that people feel good when they accomplish things successfully.

Note: On an airplane trip last summer from New York to Buenos Aires, I sat next to a young man who was born in Italy, grew up in Argentina, then came to New Jersey where, after hard work, he managed to save enough money to open a restaurant; a few years later, at the time of our conversation, he owned a successful restaurant and a small hotel in Italy. He observed, in broken English, that while he is not able to do many things, there is one thing that he can do better than anyone else in the world, - and that is, make the very best pizzas. It seems to me that this is the attitude that must be fostered in schools. Each child must feel, within the realms of his own culture, that he can do something very well. Some may challenge this suggestion on the grounds of lack of competition among Indians, but what may appear to be a lack of competition is, in reality, politeness on the part of Indians; and polite behavior and successful accomplishments can go hand in hand in any culture.

What I am suggesting is that while knowledge of one's own roots is vital, the fact remains that the young people must be able to perform well in school, and knowing one's own culture is not going to be of much help to children who cannot read their books adequately. The books used in most classrooms on this continent are too hard for most children, and the problem becomes further aggravated when there are additional hurdles, such as bi-lingualism, living away from home, etc. So it is imperative that the data obtained in this first phase be examined by an interdisciplinary team with interviews of the children of the families, in order to develop a useful and meaningful language arts curriculum and this must then be followed by a training program in which teachers of Indian children become immersed in learning how to teach the envisioned language arts curriculum.

In closing, let me suggest that there are still many questions which need to be answered, and some of these are vitally relevant to the Indian people. One question that I still do not understand, at this moment, is why the Indians gave up their religion so readily. It is true that some Indians now have two marriage ceremonies - one of which is Indian - but most know nothing about their religious heritage, and if I were an Indian I would like very much to know what happened.

What I also do not understand is why the Indian leaders have not engaged in a more fruitful public relations program with the nearby

white communities. In some communities small groups of white children go to school on the reserve nearby, and vice versa. But the interaction is very limited. I recall an incident that happened when I drove for the first time alone to the Hobbema Reserve. I stopped in a gas station in Wetaskiwin about ten miles away from Hobbema, got some gas, and checked my directions. The teenage white boy was startled: "You're not going to the reserve by yourself, are you?" He told me he had never gone to the reserve, and, that evening, while at the powwow ceremony, I thought of the young man and how much he was missing, even though he lived only ten miles away. In a very real sense, he was culturally deprived; and even though he would have been welcomed, as there were other white people, the Indians must take the initiative to develop a public relations effort which overcomes the fears that kept this young white man, and others, away.

There are many questions in regard to the psychological impact of the Indian Act which to my knowledge have never been explored. It is good that Indians receive recompense and reparation for what happened years ago, but what does this inherent paternalism do to the initiative of Indians? Perhaps nothing, but it certainly seems a question worth exploration. For in a very real sense we are all displaced persons. Who among us has not had his roots torn, as if by a tremor of the earth? Who has been able to "hold fast to dreams"? Who has not experienced a sorrow, a loss, and a longing for the past? We are all of us an uprooted people on this planet, and unless we can break the shackles of the past while extracting strength from our heritage we are all a lost people hurtling through space.

O masters, lords and rulers in all lands,
Is this the handiwork you give to God,
This monstrous thing distorted and soul-quenched?
How will you ever straighten up this shape;
Touch it again with immortality;
Give back the upward-looking and the light;
Rebuild in it the music and the dream;
Make right the immemorial infamies,
Perfidious wrongs, immedicable woes?

O masters, lords and rulers in all lands,
How will the Future reckon with this Man?
How answer his brute question in that hour
When whirlwinds of rebellion shake all shores?
How will it be with kingdoms and with kings-
With those who shaped him to the thing he is-
When this dumb Terror shall rise to judge the world,
After the silence of the centuries?

- Concluding passages from Edwin Markham's "The Man with the Hoe."

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MEMORY AND REASONING IN NATIVE CHILDREN: AN EFFORT AT IMPROVEMENT THROUGH THE TEACHING OF COGNITIVE STRATEGIES

J. P. Das and L. W. Krywaniuk

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MEMORY AND REASONING IN NATIVE CHILDREN

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INTRODUCTION

In one of his more recent books, Bruner (1971) studies the relationship of culture and cognitive growth. The issue is not a new one, nor is Bruner the only researcher in this field. In fact, one can say this is one of the oldest of all topics, dating back to the early Greek inquiries, and that it has emerged as one of the most important and controversial issues of the present time. Contemporary education has been under criticism from practically every facet of society and has attracted more attention, money and probably even energy than any other single project in the history of man. It is important because it reaches into each and every one of our lives--usually for an extended period of time. And yet, until very recently, it has not been the subject of any intense research. Schooling has always been part of our established tradition, changing little in response to changes in our culture. But now our cultures and our societies are changing. How shall our education be modified to meet this change?

The first step must be to understand what learning is and how it occurs. To do so, however, we must understand some of the basic processes found within the individual, within the brain--basic cognitive processes. Because these processea are internal, they cannot be seen, but must be inferred. The bases of this inference are manifold: language, culture, behavior and medical-physiological investigation.

Bruner, for example, criticizes the ethnoscientific approach to the study of cognitive processes "precisely because it does not deal with processes but with intellectual products as embodied in language" (p. 21). Bruner views language as both a tool and a constraint on

cognitive development. He believes in language as being the primary determiner of cognitive competence. Others, as we shall see, have different views of the nature of cognitive processes.

Factors in Cognitive Growth

Logically, one should first determine the variables involved in the study of cognitive processes. When these are established, an analysis of the separate elements can be undertaken. Cross-cultural studies lend themselves very well to this purpose. Because of the greater variation in traditions, behavior and experience, thought patterns and crucial differences in these thought patterns are more easily discernable. With the greater diversity come the possibilities to remove the unessential from the essential and the unimportant from the important. Through cross-cultural studies much important information about the variables underlying cognitive development has been gained, even though it has not always been above methodological and theoretical criticism.

Schooling seems to be a factor in cognitive development, with its material rich in symbolic representations and "Western" modes of thinking (Price-Williams, 1961; Bruner, 1966). Even when cognitive development is assessed, underlying cognitive processes have not been closely examined. Consequently, the basic processes underlying cross-cultural studies are not well understood.

In another study, schooling and urbanization were found to foster abstraction and thus the analysis of perceptual wholes (Greefield, 1966). In addition, other environmental variables such as exposure to art, music, varied stimuli and perhaps graphic or symbolic representation were found to affect the development of cognitive abilities.

Dave, and also Wolfe (cited in Stolsky and Lesser, 1968), have correlated achievement on a standard test battery including such characteristics as press for achievement, language models in the home, guidance provided by the home, and general learning provisions. Dave found a multiple correlation of .80 and Wolfe .69. Although the studies are correlational, they can provide a direction which research can take. Home environments are obviously important to learning. Remediation, accordingly, can take two forms--added experience outside the home or manipulation of the home conditions.

One can conclude that different levels and patterns of cognitive abilities are associated with different factors operating in the environment. Usually, a causal relationship is implied; that is, "poor" environments produce lower grade cognitive abilities in their members, whereas "good" environments produce higher grade abilities.

Lesser, Fifer and Clark (1965) studied patterns of cognitive functioning among Negro, Chinese, Jewish and Puerto Rican children in New York. They studied number, space, reasoning and verbal abilities, and found significant differences in the distribution of these abilities. Chinese children, for example, were high on space and number, but were low on the verbal scales, while Negro children were high on verbal and reasoning but were low on space and number scales. They concluded: "There seems little doubt that different emphases among ethnic groups in specific intellectual functions that are stimulated and encouraged are reflected in their different organizations of mental abilities" (p. 78). Status effects were common to all groups, with the middle class being highest, but the basic patterns were retained.

To this point, the literature would suggest the environment

is the major factor in the development of cognitive abilities with the basic patterns being comm_cated through the culture. On the other hand, Jensen (1968, 1969) argues that only a small number in the population is environmentally depressed and the others are simply where they belong on the normal curve of intelligence. He suggests intelligence is primarily inherited (80%) and only 20% of the variation is attributable to cultural factors. He also suggests there are two primary levels of ability, Level I and Level II. Level I is evenly distributed across cultures and is mainly dependent upon short-term memory, and Level II is differentially distributed between cultures (ethnic origins), and is dependent upon abstract reasoning. The levels are hierarchically arranged and the differences in achievements are explained by the differential distribution of Level II abilities.

Although Jensen's argument is powerful if one considers only the context within which it is formulated, it is too narrow to explain differences between major cultures or environments. Jensen's conclusions have received a virtual deluge of criticism. He places heavy emphasis on the data resulting from the study of twins and the effects of environmental variation on their intelligence. Even after separation, however, these twins were always found within the same general culture and thus his conclusions lack generality. Then, too, he does not explain why certain American Indians, who are certainly more deprived culturally than the Negro samples he uses, consistently score higher than the Negro peoples.

His argument, therefore, is far from conclusive.

Theoretical Structure

Recently, Das (1972) has offered alternatives to Jensen's hierarchy of ability levels. Das suggests that there are two main cognitive strategies for processing information (sequential and simultaneous), which, to some degree, represent alternatives in thinking processes rather than determinants of these processes. The basic concepts are taken from Luria (1966), who conceptualizes two main cognitive processes (sequential and simultaneous) centered in the brain and tied to temporal and spatial perception, respectively. Luria's evidence is carefully documented and is based mainly on the disruption of these processes due to localized brain injury. These two processes are fundamental and essential to proper cognitive functioning.

Das assumes Luria's basic theoretical orientation but suggests that although the actual processes are fixed, the way in which they are employed in thinking and problem solving are not. There are, therefore, strategies in which the basic cognitive processes are used. It is in the employment of these strategies that the crucial differences are found. It would be difficult indeed to define a task tht required purely simultaneous synthesis or a task that required only successive thinking. Because even simultaneous events are considered during a time interval, they require simultaneous processes to that extent. Sequential events also require some spatial element.

Since there is this degree of commonality in a task, the response must also have the characteristics of both processes. Individuals will, therefore, differ in their approach to any particular task and will also have some degree of freedom to vary the strategy they use. There is, for example, some evidence to suggest

that mentally retarded children use some inappropriate strategies in their cognitive processes as compared with non-retardates (Das, 1972).

Lesser, Fifer and Clark (1965) suggested the patterns of abilities (and thus cognitive processes) were culturally determined, not by inheritance as suggested by Jensen. The main implication of this viewpoint is that since strategies are learned through experience and interaction, they can also be modified if they are inappropriate, or augmented if they are lacking. This approach has the advantage, over the determinist's position. It allows for change and, indeed, expects changes to occur as the individual interacts with his environment.

An example of competing strategies in competing environments can be seen in the situation of the Canadian and American Indians. In the schools they learn "the ways of the white man" while at home they learn the ways of their native people. This duality of life must have serious impact on children's learning styles (Cazden and John, 1968).

Rohrer (1965, pp. 33-34) points out this duality very clearly:

> A fundamental difference lies in the method of learning. This difference creates an important discontinuity in the enculturation process of the children. Kwaliutl children typically learn by observation, manipulation and experimentation in their native setting, but they must learn by verbal instruction, reading and writing in the classroom.

Implementation of Theory

To put educational change into operation, theories must be formulated, diagnoses undertaken, and remediation programs designed. In addition, provisions must be made for careful and competent evaluation to insure that the goals of the researcher, the child and

the community are met.

Theory, taken alone, may not serve a useful purpose to the classroom teacher. It is, however, indispensible in making an accurate diagnosis of learning problems. Without the stabilizing effect of well-thought-out theory, diagnosis becomes mere guesswork and remediation tends to be hit-and-miss or simply trial-and-error.

An accurate diagnosis is, then, the next step after theory.

Cowan (1970) argues for a diagnosis on two main points: cognitive factors in motivation and cognitive strategies in the processing of information. He suggests a conceptual approach based primarily on a differentiated description of children's cognitive strategies. He adds a note of caution in suggesting that strategies are not easily measured or quantifiable.

Remediation Programs

Silver, Hagan and Hersh (1968) report using perceptual training to improve reading ability in children. Their remedial program had three levels: (1) an accuracy level to develop accuracy of perception, (2) an intermodal level to relate two or more perceptual modes, and (3) a verbal level, to insure transfer of perceptual abilities to language skills. Each child was assessed and, on the basis of a battery of tests, a perceptual profile was prepared. The study involved 80 boys in a matched pair design. The boys ranged from 7 to 11 years in age with WISC IQs at 85+ and achievement at least one year delayed in reading. Their training involved the visual, auditory, tactile, and kinesthetic modalities and the body image as well. The study was designed to determine whether perception is modifiable and whether this contributes to reading improvement.

For example, in the visual modality, perception of form was taught. The form started with the circle, square, rectangle, triangle and diamond, and proceeded to asymetric forms, matrix-like forms and finally to overlapping and adjacent complex forms. Accuracy was taught through recognition, copying and recall. After analyzing their results, they concluded: "Perceptual training at that critical age when the function normally develops may indeed enable the child to grasp language material which would otherwise escape him" (p. 209).

In a long-term research study, Schiffman (1970) worked with 240 remedial pupils with near average IQs but with severely delayed reading and word recognition problems. He developed corrective instruction based on visual perception, auditory perception, body image, language development and communication skills and physical development. He found a significant gain in pupils taking corrective instruction and also that the most effective time for correction was the second grade, with the effects decreasing with increasing grade level:

> The importance of early detection and remediation for corrective pupils is demonstrated . . . The low percentage of remediation for these pupils not receiving extra corrective instruction demonstrated that the marked differences between the early and the late grades . . . are the result of extra corrective instruction. (p. 79)

One of the conclusions drawn from the study of children with reduced opportunity has been that these children are handicapped by a curriculum that does not meet their needs and requirements (Bloom, Davis and Hess, 1965). To be fully effective, an educational experience must be relevant to a child's perceptions and cultural experience.

Guinagh (1971) questions Jensen's (1969) premise that

intelligence is largely determined by genetic factors. In his work with low socio-economic white and Negro children, Guinagh found scores on Raven's Progressive Matrices could be significantly improved by concept training. This brings into question Jensen's assertion about the immutability of abstract abilities.

Gray (1970) describes the Demonstration and Research Centre for Early Education (DARCEE) which is mainly concerned with improving the educability of young children from low-income homes. The main focal point of their endeavor is in the interventions with children and their families. This program involves the mother, siblings and home visits by a trained home teacher. It is organized around two major classes of variables: attitudes conducive to achievement and aptitudes for achievement. She presents "modest but consistent" results in support of this program. Gray et al. (1966) have developed a curriculum to serve as a point of departure for the classroom intervention program.

The main significance of this study is that it represents a long-term, on-going research and intervention program that involves more than just the child.

Interventions can be of two main types: total enrichment programs such as "New Horizons" and "Headstart" or programs to ameliorate specific deficits or problems. Blank and Solomon (1968) prefer the second approach: "The premise of this approach is that, while total enrichment is not without value, it does not diagnose key deficits of the . . . child" (p. 63). Mere presentation of a wide range of stimulation does not guarantee the child will involve himself to the extent that he will overcome his deficits. In fact, the child may be already overstimulated, but without the guiding forces that

help him organize this stimulation: "Their behavior reflects the lack of a symbolic system by which to organize the plentiful stimulation surrounding them" (p. 64). In their study, they concentrated on the development and elaboration of language patterns and found significant gains on the Stanford-Binet IQ score after as little as 12 hours of training.

Kirk (1970) cites an unpublished report by Karnes in which different forms of preschool education and changes on the Stanford-Binet IQ scores were compared along with changes in the Illinois Test of Psycholinguistic Abilities. The types of preschool education compared were: the community integrated programs, Montessori method, traditional nursery school, amelioration of learning deficits and the direct verbal approach. In both comparisons, the amelioration and verbal approaches were superior to all others. Karnes does suggest, however, that short-term intervention may not be lasting and that long-term programs must be undertaken.

Summary

Miller (1970) offers the following generalizations:

1. Where limited intervention objectives in the psychomotor and cognitive areas are clearly delineated and intervention techniques are specifically designed to accomplish those objectives. Significant gains can be obtained over the chronological age range from neonate through early school years.
2. Such gains can be obtained over a short intervention period.
3. Little evidence is available concerning the longevity of obtained effects nor the effect of specific gains on more complex skills (p. 468).

In his summary, Miller concludes:

> Enthusiasm runs high to do something--almost anything--for young . . . children. However, the mass crash programs [e.g. Headstart] have failed to produce evidence of their effectiveness. Part of the difficulty is the service priority and lack of adequate planning time for sound evaluation. A more serious problem is the traditional emergent philosophy, which undergrids most programs. There is little or no evidence to support such a theoretical stance, nor is there evidence to support practices based on this theory. (p. 482)

In an extensive review of compensatory education in the United States, Gordon and Wilkerson (1966) comment on the effectiveness of intervention programs:

> As was the case with the much heralded Project Head Start, the wide acceptance of the idea, the involvement of many segments of the community, and the political momentum building up behind such effort, combine to give the impression of success. (p. 156).

They see the main failure of these programs as being the result of approaching evaluation and decision making on an inadequate basis. Some of the children are being helped but it is not clear what helps which students under what conditions.

THE STUDY

We have attempted a short-term demonstration program in order to test the effect of different types of cognitive strategies on learning and to develp teaching techniques used in the amelioration of learning problems. As can be seen from the previous section, there is considerable evidence suggesting that short-term remediation can be done with at least some success if it is designed according to specific criteria.

What is lacking from the literature is the availablility of special programs to meet the needs of children with specific learning problems. With this in mind, we have not only done a careful diagnosis of learning strategies, but also discovered learning problems and have programs to alleviate them.

Through the administration of a range of psychological tests, both general and specific, a profile of learning strategies was determined. This served as a baseline measure for this study. Following this, the teaching program was designed and administered to the children. Upon completion of the program, the children were again tested on the same tests as before, to see if there had been improvement due to the teaching. To provide controls assuring us the results are due to teaching rather than other effects, the children were divided into two groups, one having a maximum treatment and the other a minimum treatment. This enabled us to compare one group that had extensive teaching to a group that had less teaching.

An alternative procedure would have been to give no training to another group. This, perhaps, would have increased our chances of obtaining significant results; however, it would also be open to more

criticism. By choosing the first alternative, we are more likely to demonstrate concommitant effects; that is, effects not due to extrinsic factors such as simple contact with the remediation. We should be able to demonstrate positive gain for both groups but with one group gaining more than the other.

Design

The basic design, then, was a two-group repeated measure. The maximum treatment group (Group I) was matched to the minimum treatment group (Group II) on the basis of WISC Verbal, Performance and Full-Scale IQ scores. This was done to provide some assurance the groups were equivalent after the pretest; that is, before the remediation began. The results were then analyzed by means of an analysis of variance technique. To this, an analysis of covariance was also added to make further adjustments that would compensate for differences in starting positions. Although every attempt was made to make the groups as equal as possible, it is virtually impossible to make them so on all the different measures used.

The second step was to perform a regression analysis of all the measures on the IQ measures. This was done as a method of determining the composition of IQ scores. From this, also, was derived a table of intercorrelations, both pre and post.

Thirdly, a factor analysis was performed to gain further insight into the make-up of the learning strategies.

PRETEST

General Procedure

Approximately 40 children from five different Grade 3 and 3-4 classes in the Ermineskin School at Hobbema were selected on the basis of the previous year's school work. The children chosen represented the lowest academic group in their grade. The only constraint applied to the selection was that only one child per family was selected. Age was from 8-0 to 12-2 at pretest.

All children were given a baseline testing series which included the following selection of tests:

Wechsler Intelligence Scale for Children (WISC)
Raven's Progressive Matrices
Figure Copying Test (FCT)
Memory for Designs (MFD)
Serial Learning Test
Making X's
Visual Short Term Memory (VSTM)
Schonell Graded Reading Vocabulary Test
Stroop Test + H-R-R Pseudoisochromatic plates
Cross-modal Coding Test.

The WISC was always given first, but the others were not necesarily given in the same order for all children. All tests were given individually.

The Tests

Wechsler Intelligence Scale for Children

This is one of the standard IQ tests for children of this age group. It consists of a verbal, a performance and a full (combined)

IQ scale. It was administered to all children in the pretest and post-test by Mr. D. MacPherson.

Making X's

The Making X's test is intended as an assessment of a child's willingness to comply with instructions and to mobilize effort in complying with these instructions for a short period of time. The test consists of two parts. In the first, the child is presented with a page on which there are a series of small boxes drawn. The child is instructed to make X's (corner to corner) in these boxes. He is told to stop after 90 seconds. In the second part, he is presented with an identical sheet but this time is instructed to work as rapidly as possible, that is, to make as many X's as he is able in the given time period. His score is simply the number done in each case.

The Figure Copying Test

This test was developed at the Gesell Institute of Child Study at Yale University as a means for determining developmental readiness for the traditional school learning tasks of the primary grades. It consists of 10 simple geometric designs ranging from a circle to a cube seen in perspective, in a graded hierarchy. They are presented one to a page with half of a page left for the child's drawing. He is given as much time as he requires.

This test measures the accuracy with which a child is able to reproduce these designs. There is no memory component as there is in the memory for designs. It is thought to reflect the maturity of the visuo-motor system.

Each item is given a score of 0, 1 or 2, depending on the quality of the drawing. The child's test score is the total score for all 10 items.

Visual Short Term Memory Test (VSTM)

This test consists of two practice and 20 test five-element number matrices of one digit/cell presented in the shape of a cross by the use of slides. The child is asked to look at each matrix for five seconds, is distracted for two seconds (a color naming task presented by the next slide on the same screen) and then to write the numbers down into a blank matrix similar to the one presented on the screen. The slides were presented on a daylight screen by means of a Kodak Carousel projector to which had been added an automatic timer that would change the slides after the appropriate time interval.

Especially in the early stages, some children forgot to name the colors. In this case, on the next trial the child was asked to name the colors when the next colors appeared. Otherwise, there was no comment or prompting from the experimenter.

The VSTM is regarded as a test of visual memory. There is no learning variable in the sense that all children by this age are familiar with the numbers 1 to 9. All that is required is the child's remembering the position of the five numbers presented and writing them down.

Memory for Designs (MFD)

The MFD was developed by Frances Graham and Barbara Kendall, originally as a test for brain damage and organic impairment, to be used both in clinics and as a research tool. The MFD was used in researching the connection between the inability to do certain tasks and organicity.

The test materials consist of 15 cards, each five inches square, on which there are various geometric and line drawings. Scoring criteria have been developed and standardized by Graham and Kendall. The child's

responses are graded in terms of departure from the standard. This grading system assumes that reversals are the best indication of impairment and thus scored the most highly. Closure of open figures and gross distortions are rated as next highest and scored accordingly. Finally, number of simple errors is scored least highly and represent minimal distortions. The score is the total error score for all trials.

The reproduction of these designs after studying them for five seconds is thought to be a good test of immediate memory and its association with brain damage.

Cross-Modal Coding (CMC)

Cross modal coding is the ability to translate information gained through one sensory input device into another. In this case, the stimuli were received through the auditory senses, and the response was to match it to a visual stimulus.

It consisted of twenty items which were a series of "beeps" presented in a rhythmic pattern. The child was required to listen to each pattern of sound and to choose the corresponding visual pattern from three alternatives. These sounds were presented by means of cassette tape recordings and were exactly the same for all testing situations. Included was a training series to ensure that all children had some common background in this task. In the training, every attempt was made to have all children understand the task. In some cases, this involved a repetition of the training procedure.

It is thought that CMC is representative of the interface between input and output of stimuli; that it is the cross-over between the separate sensory modalities and is, in fact, an entity in its own right, independent of the functioning of the sensory systems per se.

Serial Learning

The serial learning test consisted of 48 groups of four words presented by cassette tape recorder. The 48 groups were divided into two main categories: acoustically similar and semantically similar. The acoustically similar words were selected at random from a word pool consisting of the words man, mad, mat, pan, can, cab, cap, tap, cat. This category had 12 groups of acoustically similar words and 12 groups of control words selected at random from the word pool consisting of day, hot, cow, pen, book, few, key, bar, wall.

The structure of the semantically similar category had 12 groups of control words and 12 groups of semantically similar words chosen from the word pool: big, large, tall, high, long, great, fat, wide, huge.

The control groups were randomly interspersed between the test groups.

In the administration, the acoustic category was always presented before the semantic category. The administrator had before him a sheet with all the words written on the page in the order presented. As each child repeated each group of four words, the order in which the words were spoken was written down in numeral form. For instance, in the example "mad, mat, man, pan", if the child said "mat, mad, man, pan", the numbers 2, 1, 3, 4 were written on the answer sheet. Thus, it can readily be seen that he remembered all four words, but only two in their correct serial position. The scoring was approached with two basic strategies. One was the total number of words remembered (free recall) and the other was the total number remembered in correct serial position (serial position recall).

If an inappropriate word was used, it was counted as a "space taken" for serial position purposes and was recorded in writing at the end

of each group. The inappropriate word, of course, did not contribute to the total number of words recalled.

The scoring was done in the following ways:

Serial Position	Free Recall
acoustic (12 groups)	acoustic (12 groups)
acoustic control (12 groups)	acoustic control (12 groups)
semantic (12 groups)	semantic (12 groups)
semantic control (12 groups)	semantic control (12 groups)

These were also recombined into the following categories:

Serial Position	Free Recall
Total acoustic (a + ac)	Total acoustic (a + ac)
Total semantic (s + sc)	Total semantic (s + sc)
Total control (ac + sc)	Total control (ac + sc)
Total serial position	Total free recall

Key: a = acoustic
s = semantic
c = control

The Stroop Test

The Stroop Test (Stroop, 1935) consists of three stimulus cards, each 18" x 25" and having eight rows with five positions to a row. The first consists of the words red, blue, green, and yellow written in black ink on a white background, in random order. This is named the Word Chart. The second, or Color Chart, consists of the colors red, blue, green, and yellow in little strips presented on a white background, approximating the format of the "word" chart. The third chart, or Color-Word, was a combination of the first two. The words were written in a conflicting color. The word "red" may have been written in blue ink or the word "green" in yellow ink. The format was similar to the

other two.

After a short practice exercise used mainly to ascertain whether the children knew the words and colors and understood the third task which was to name the color and not read the word, the child was instructed to do the test as rapidly as possible (without mistakes). His time for each chart was recorded. The Pseudoisochromatic plates were developed for the American Optical Company as a test for color blindness. It was used to screen children for the Stroop test. No children had to be rejected from this test due to color blindness.

The Schonell Graded Reading Vocabulary Test

This test was developed by Schonell to provide a quick, easy method of determining the child's reading level. It consists of groups of 10 words presented in order of difficulty. The child is simply instructed to start at the top of the page and read the words as clearly as he is able. The examiner listens closely to ensure that the child pronounces the words correctly, and then records the number correct. He may ask for a repetition, but is cautioned against asking too often, so as not to give the impression that a change is required.

The score could be converted into a reading level score, but for purposes of this study, the raw score was used.

When the pretesting was completed, the results were examined with regard to patterns of learning. Some selected results are presented below:

Table 1. Means of Pretest Scores

Test	Mean	S.D.
WISC (Verbal)	78.05	11.70
	93.39	12.24
	83.66	11.57
Progressive Matrices (raw scores)	23.08	4.05
MFD	3.81	2.80
Schonell (raw scores)	27.81	11.21
CMC (out of 20)	10.79	4.09
FCT (out of 20)	12.08	2.19
Serial (out of 192)	91.52	31.01
Free (out of 192)	126.05	29.52

It was noted that WISC Verbal scores were considerably lower than the performance scores. This has often been found with culturally disadvantaged children. Considering this was a low achieving group, one would expect a below average Full-Scale IQ. In a school setting the verbal skills are obviously the ones that will most closely predict achievement. However, it is significant to note that the average Performance score falls within the normal range of intelligence. When the Progressive Matrices scores were converted to percentiles, it was also noted that the scores are approximately normally distributed. Raven's Manual allows the examiner to calculate a percentile rating for each child according to his raw score and age group. This percentile score reflects the number of people above and below him in performance on this test.

As can be seen from Table 2, more than half of the children tested were at the 50 percentile or above. This suggests that on some

abilities this is an average group of children, and again tends to re-emphasize the dependence of the educational process on verbal abilities.

Table 2. Percentile Scores on Raven's Progressive Matrices for Pretest

Percentile	No. of Cases	
90-100	4	
80-	4	
70-	3	21
60-	2	
50-	8	
40-	5	
30-	0	
20-	6	17
10-	2	
0-10	4	

Raven's manual does not provide enough data for very accurate calculation of percentiles from raw scores, as it is intended to be used as a guide and as a result, many of the scores were interpolated. Consequently, it was decided to use raw scores, which are not subject to transformational losses. This, however, does not allow for an accurate analysis of the gain during the intervention period, as a gain of one raw score point means different things at different age and percentile levels. In addition, children are expected to evoke certain gains to maintain their position in the age levels. On the basis of the normative data in the manual, it is difficult to make these interpretations; however, perhaps the major findings will adequately demonstrate the trends. It has already been shown that the Progressive Matrices and

the WISC Performance Section measure very similar concepts. Our results tend to verify this finding.

A more complete report of the results can be found later in this paper.

It has also been demonstrated that the verbal thinking is associated primarily with sequential processing and that the Performance Scale was associated with simultaneous processing. The Progressive Matrices Test is also associated with spatial-simultaneous processing.

According to this theory, then, these children are deficient in sequential processing. Das (1973, in press) has shown that for many types of cognitive tasks, alternative strategies can be used. From this it can be concluded that these strategies are learned and, therefore, can be taught.

Performance on the Serial Learning tasks also suggested a deficit in serial position memory. Observations in administering the Visual Short-term Memory suggested reasonably good memory but poor search and memory patterns, that it, how the separate, discrete elements were serialized, first in the search, and second in the retrieval. The patterns observed were inconsistent and inefficient. It seemed that order did not play an important role in their cognitive strategies.

On the basis of these observations and results, a program emphasizing sequential strategies was designed and administered for the children for a total period of seven weeks during the school year.

At this point the children were divided into two groups. One group came from two classrooms and the other came from three classrooms. The children were grouped in this fashion to minimize carry-over from one group to the other. In spite of the criteria for grouping, the scores on the WISC came out very similar for the two groups. The WISC

was the a priori matching instrument and was used primarily for this purpose. Some results of this comparison are shown in Table 3.

Table 3. Comparison of Groups on Pretest Measures

	Group I Means	Group II Means
WISC V	78.82	77.75
P	94.00	92.55
FS	84.53	82.95
Progressive Matrices	21.667	23.90
MFD	4.125	3.90
Schonell	24.80	31.20
CMC	9.267	12.30

Group I, consisting of 19 students, had maximum intervention involving approximately 14 hours. (During the course of the testing and remediation, three of these students dropped for various reasons.)

Group II, consisting of 21 students, had the minimum intervention of about 3 hours. (Only one from this group had to drop out.)

INTERVENTION

Sequence Story Boards

The sequence story boards consisted of three separate stories, each having 12 pictures which could be arranged to tell a story. They were entitled "A Trip to the Zoo", "Grocery Store" and "Building a House".

Generally, the procedure was simply to place the pictures in a random order in front of the child and instruct him to arrange them so they tell a good story. When this was completed, the child was to tell the story, picture by picture, paying attention to details.

The format of the board was three rows of four pictures each, so in effect the child proceeded in the same order as if he were reading a page.

The child's arrangements were not usually correct on the first attempt. This, however, was not dealt with until he was telling the story. As he told the story, the inconsistencies in the arrangement were pointed out, and he was given time to correct them.

If the child was having difficulty, the minimum amount of necessary help was given. For instance, he might be asked to point out the first picture in the story, and if he could not do it after a reasonable time, it was shown to him. If it was obvious the child was having considerable difficulty, the pictures were grouped into three piles, one for each row, with the correct pictures for that row in each pile, but in random order. This was sufficient help for all students that needed maximum help.

The three stories were done on separate days during the

intervention time period.

The purpose of these was to give the child practice in ordering data into sequential forms by paying attention to visual details. Included in this was the necessity for the child to attempt at least some verbalization. He was always encouraged to verbalize when attempting to solve the problem. The task was expected to augment verbal mediation in serialization. This procedure should improve scores on the Picture Arrangement and Picture Connection subtests of the WISC and the Serial Learning Test. These story boards are commercially available from The Judy Company, 310 N. Second St., Minneapolis, Minn. 55401, U.S.A.

Parquetry Designs

Task I

The parquetry designs consisted of a number of squares, rhombuses and triangles of various colors which could be arranged into patterns, the whole pattern usually forming a square. There were four patterns available on sheets of paper. In the first few trials, the child built the pattern directly on the sheet simply by placing the colored block over the appropriate shape (and color) on the sheet. This was done mainly to familiarize the child with the various shapes and how they related to each other.

The child was then required to build these designs, but not on the pattern sheet. He consulted the pattern but built the design directly on the table. This involved not only the perception of the pattern, but also construction of the same pattern with the same orientiation and relationships in a different space.

The patterns contained sub-patterns which could easily be discerned by most students. The children were allowed to choose their own

strategies for building the pattern, but if they had difficulty, an approach was suggested--generally that of building sub-units.

This task proved to be considerably more difficult than the first one, but all children succeeded in it.

The purpose of this task was to teach the children search strategies and to give practice in the serialization of spatial designs. The simplest strategy was to choose a reference point and work from it in a consistent fashion. The greatest problem seemed to be working in a consistent fashion. Generally, much help was not given or required, as the children usually developed a better strategy by the third pattern.

Task II

Using the same blocks as in I, a series of outline forms was developed which could be filled with the blocks. There were a number of series of these outline forms. A series would consist of three to five forms, each more difficult than the preceding one, and developed from it by the addition of more pieces, e.g.

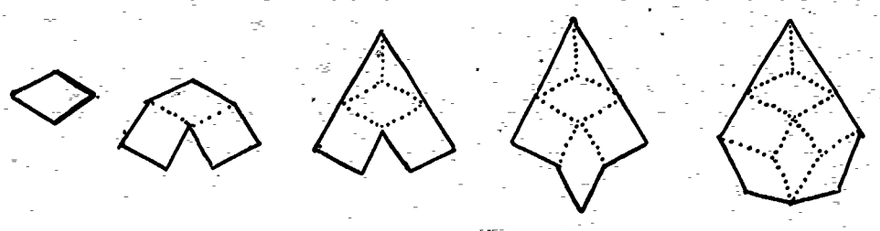

Figure 1

(dotted lines do not appear on the child's sheets)

Each outline was presented on a separate page and they were centered so the pages could be overlayed and the child could see how the easier form related to the more complex one. This was done by making fairly dark lines on ordinary paper.

When he filled in each form, the child was instructed to remember how he did it, and to do the next one in the same way, and then adding some pieces.

This involved a certain amount of spatial memory, and the idea that spatial things are usually made up of serial events. In the beginning, many children did not use this approach, but simply attacked each form as a new problem. This was allowed, but it made solution much more difficult as there were generally only one or two basic patterns to fill these forms, and the easiest was usually the sequence developed in the series. The forms were all symmetrical and ordered, so as to give more clues. The child had the choice of colors, as most of the same shapes came in varied colors. Usually the child tried to make pleasing patterns--mostly symmetrical ones.

For most children, there was a gradual learning of the required strategy, that of remembering the preceding design and using it as the core of the next one. For some it worked only for the medium-hard ones and then broke down in the more difficult ones. Generally, the only help given was to show the child he could take the previous sheet with the simpler form and overlay it on the more complex form to try and re-derive some of the relationships. This was adopted by some and used in a more consistent fashion.

Most children seemed to make progress in building these designs. They seemed to fulfill the purpose of this task, that of developing

consistency in spatial synthesis as well as adding memory as a strategy in the solution of spatial problems.

Task III

This series of tasks was much like the preceding one, except that it was more difficult. It was given on another day during the intervention time. Designs are common to many of the tests used. Practice with parquetry blocks should improve the scores on the WISC Block Design and Progressive Matrices as well as scores on the FCT and MFD tests. All three tests are based somewhat on the use of forms and the ability to abstract forms from visual data. The basic blocks and designs are commercially available.

Serial Recall

Object

This intervention task had two parts. In the first, 12 common objects were laid on the table and the child was instructed to name them. Any name the child gave was accepted. These were then placed in a box, and the child was asked to recall as many as he could. If he did not remember all 12, these were again all placed on the table, and the child again studied them. He was again asked to recall them. This procedure was repeated until he could recall all 12 objects.

In the second part, 12 different objects were used. As before, they were laid on the table for the child to name, but now he was asked to put them into piles that were "the same" in some way. If he did not understand, some guidance was given. Usually the objects were grouped according to color, material, shape or functional association. This was done to encourage the child to use grouping strategies to recall.

The task then continued as in the first part. Short-term memory is thought to be one of the primary abilities needed for intelligent thought and reasoning (Jensen, 1969). This task should improve the scores on the WISC Digit Span, and toward the other measures of short-term memory.

Coding

In this task, the child underwent a small training series of hand and knee "claps" in which he followed the administrator's movements. This was done to familiarize the child with the task and introduce the two necessary movements: a hand clap and slapping both hands on the knees. This was done in a rhythmic fashion, much as in the CMC test. When the child was able to copy the instructor's movements, he was introduced to the cards on which these movements were coded by dots and squares: a dot for a hand clap and a square for a "knee clap". The series began with simple patterns and proceeded to more complicated ones. Some patterns were:

Figure 2

The criterion for each task was completion in a rhythmic fashion. If he did it wrongly, he was asked to do it again, up to a maximum of three trials; he then proceeded to a new card. Most children completed these reasonably easily although some had considerable difficulty. When the series was complete, the cards were inverted, having the effect of

reversing each card, and the series was done again.

The purpose of this task was twofold. First, it gave practice in cross-modal coding, visual —— kinesthetic (with the auditory serving to confirm the visual cues). The second purpose was to encourage the use of symbolic mediation and rhythm which we think constitutes processes necessary to reading. This intervention device was aimed primarily at the CMC Test but as rhythm is important to many processes, it may have some general implications.

Matrix Serialization

There were two parts to this task, differing only in difficulty. The matrix consists of a five-cell cross identical to the ones presented in the VSTM Test. However, here in the initial part the five numbers were presented in a serial way, one number at a time on different matrices, leaving the other cells blank. For example, the following were presented one at a time in the order shown in Figure 3.

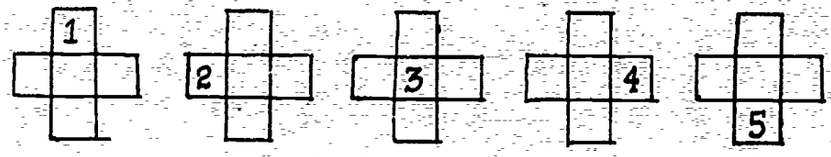

Figure 3

As each matrix was shown, the child was required to repeat it and when all five were shown, to recall the whole series and write it down. If he missed any, he was shown the whole matrix and asked to read it out loud (as in Figure 4).

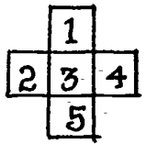

Figure 4

He was then asked to repeat it and write it down. This was done a maximum of three times for any one matrix. The first series consisted of 12 such sequences order in difficulty from simple, easy sequences such as 1, 3, 5, 7, 9 to more difficult sequences such as 8, 1, 6, 5, 3.

The second part, done at a different time, was composed of the last six of the preceding task plus six more matrices which were presented with cell five numbers at once. The child was required to read each series in the prescribed order and then recall and write them down.

It was observed during the initial testing that the children did not search the matrix in any particular order nor any consistent order. Also, they did not necessarily write the numbers down in the same order as they were read. Consequently, this led to many mistakes in serial position. The purpose of this learning task, then, was to develop a consistent strategy in scanning and recall. It was hypothesized this was one of the reasons these children were having difficulty in reading up to this point. Indeed, consistent perceptual strategies are also common to many important perceptual tasks. This remediation was aimed primarily at the VSTM Test but it should also have more general implications, especially in the WISC Digit Span and Serial Learning test.

Auditory Discrimination and Digit Span

The auditory discrimination task consisted of three parts administered one after the other on the same day. The words used were all of the different words used in the Serial Recall test. The first series was composed of the control words cow, pen, few, day, book, bar, wall, hot, key. The words were read one at a time and the requirement was a simple repetition of the word. If a mistake was made, the word was repeated. The purpose of this task was to familiarize the children with these words and to check whether they were having difficulty in discriminating single words in the test.

The second part was done to encourage the use of associations in memory. The words big, long, great, tall, fat, wide, huge, high, large were read one at a time and the child was required to think of a word (object) that could be described by the stimulus word. When the list was read once, it was read again one word at a time and the child was asked to repeat the word (object) he originally used. This was done a maximum of two times. It was interesting to note that many children found it difficult to think of words that could be described by these adjectives. The reason for this could not be determined. The children seemingly understood the words but could not apply the concept. Admittedly, the process is the reverse of the usual order for the adjective-noun process. However, it seemed unusually difficult. The memory part was also poorly done. Time did not permit an expansion of this task even though it was suggestive of a problem area. These words were taken from the semantically similar section of the test.

The third part consisted of the words from the acoustically similar section of the test: man, mad, mat, cat, cab, cap, can, pan, may, tap.

These words were read one at a time and the children were asked to write the word down and then to draw a picture representing the word. As was evident from this task, many of the children have difficulty in final consonant discrimination. If the child did not write the correct word, it was repeated. If he still did not understand, his mistake was corrected and he was given some help by examples. The purpose of this task was to encourage the use of visual symbolism in auditory tasks.

In general, the purpose of these tasks was to present alternative strategies for use in memory.

The digit span task consisted of series of random numbers from three to eight digits in length. The digits were read in such a way as to group them initially into groups of three. The child then repeated them, usually adopting the grouping strategy. As he progressed through each series, the grouping was faded out on the part of the remediator. The child generally retained his grouping strategy. If he did not, the grouping was reintroduced. This proceeded from groups of three numbers to as many as the child could remember. The task was continued until the grouping strategy was firmly established. The purpose of this task was to introduce the grouping strategy into memory. This group of strategies was intended to improve auditory discrimination and short-term memory as measured by the WISC Digit Span and Serial Learning test.

These tasks were all done individually with each child. In general, the children were encouraged to use verbal indication and were encouraged to verbalize their thinking. The remediation tried to encourage the use of appropriate strategies and to lead the learning

tasks in such a way as to point out how these strategies were used in the solution of the problem.

This group of children also watched at least eight hours of "Sesame Street" during the course of remediation. There has been considerable interest in Educational Television and the implications for research and teaching. Meichenbaum and Turk (1972) recently reviewed some of the literature involving "Sesame Street" and concluded it is a significant precedent in combining research and program development. It is especially important in that it can help reduce some of the preschool and continuing differences between the abilities of children.

In addition, both groups of children went through a series of five filmstrips. This was done grouping the children in three or four to a group. The filmstrips were entitled:

Visual Discrimination and Spatial Orientiation
Visual-Motor Co-ordination
Visual Memory
Figure and Ground
Visualization

Filmstrips

General

It is recognized that visual perception plays a major role in learning and cognitive growth. The filmstrips were designed in such a way as to develop perceptual skills and to remediate them for those having problems. Visual perception is not a single skill or ability, and for this reason this series of filmstrips was designed to include the various facets of visual perceptual skills.

Each filmstrip was composed of about 30 frames, each with a

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Each filmstrip was composed of about 30 frames, each with a

separate (visual) problem requiring a response from the children. As was previously mentioned, the filmstrips were shown in groups of three or four children at one time. The children were asked to call out the answers or to respond by raising colored blocks as their response. The social nature of the task was recognized and taken advantage of in teaching perceptual strategies. The child had an opportunity to compare his response to that of the whole group. If it was different (wrong in most cases) he was asked to look at the problem again to see if he was right or wrong and to change his answer if he desired. The others were also asked to examine their responses to see if they were correct. If there was a variety of responses, this was pointed out, and the children again checked their responses.

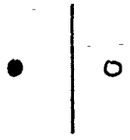
As each filmstrip was graded in difficulty, the group as a whole had the opportunity to respond to more and more complex problems. At all times they were required to give correct responses. In the few cases that they could not reason out the correct response, it was explained to them before the next problem was encountered. Although not all children could do the most difficult problems, they all seemed to enjoy the task and the associated interactions.

Extreme care was taken in the first few frames to ensure the children knew what was required of them. It was noted that there was often a series of errors before "insight" took place, and subsequently a nearly perfect series of responses. No records were kept of the responses as the children were very sensitive to academic failure. It was reasoned this should be an enjoyable learning experience free from the constraints, failures and frustrations these children usually found in their learning experience. For this reason, the tasks were

left as general and unstructured as possible.

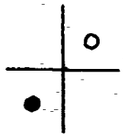
Visual Discrimination and Spatial Orientation

This series included the ability to discriminate directional differences such as right-left, up-down, forward-backward, and in-out in relation to objects in space. For example:



Which dot is to the left of the line? Which dot is to the right?

and

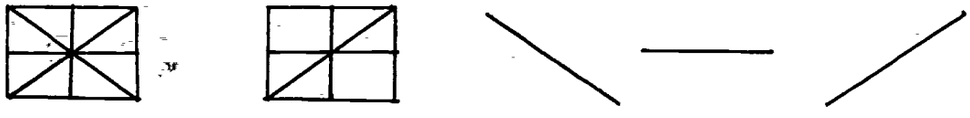


Which dot is to the right and above? Which dot is to the left and below? Which dot is to the left and above (none)?

Figure 5

Visual-Motor Co-ordination

This task requires the ability to discriminate and construct the integral components of basic forms. The children were required to decide which of several alternatives would complete one form (incomplete) and make it look like the completed form. For example:



criterion test alternatives

Figure 6

The child was required to mentally superimpose each alternative on the test and respond by saying which was the correct one, left, middle or right. It should be noted that this response method reinforces the concept learned in the previous filmstrip.

Visual Memory

This task required the ability to remember visual stimuli. Each problem in this series required two frames. The first frame presented the problem in picutre form. On top was a card presented face down and underneath were three or more cards pictured face up on which there were varied stimulus objects. The child was instructed to remember both the pictures and their positions. In the second frame, the top card was shown face up with one of the stimulus objects, and the bottom row was presented face down. The child was required to name the position the stimulus object was in previously. For example:

Frame 1 Frame 2

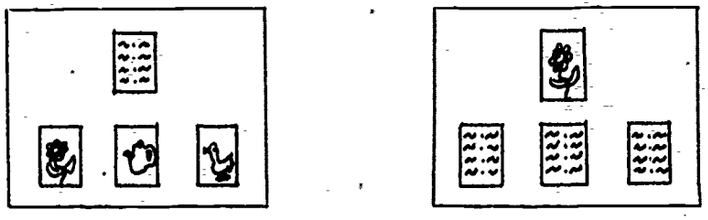


Figure 7

After frame 2, the child was required to say "left". If the wrong answers were given, the original was presented again and the child had the opportunity to see what the correct response should have been.

Figure and Ground

This task requires the ability to select the appropriate visual stimulus in spite of visual distractions. The problems consist of a number of overlapping or non-overlapping geometrical figures in which colored dots are placed. The questions asked take advantage of the conjunctional forms "and", "but not in", and combinations of these. For example:

Which dot or dots are in the square and the circle but not in the triangle? Which dot is in the triangle but not in the circle or square? Which dot is in the square and triangle but not in the circle (none)?

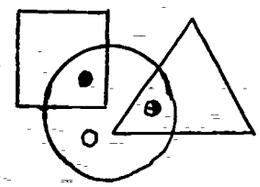


Figure 8

Visualization

This task is based on the ability to integrate all the visual perceptual skills. Complex and overlapping visual stimuli are to be discriminated and the correct response given. In each frame, the child is required to follow lines that originate from letters or numbers on the left side to numbers or letters at which they end on the right side. The children were urged to use only their eyes and not their fingers. For example:

Which number does A join up with?

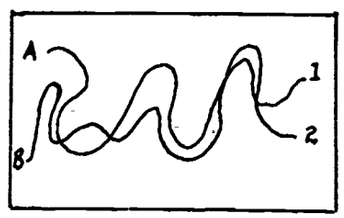


Figure 9

The filmstrips were developed by Classroom Materials Company * and are available at the Education Library at the University of Alberta. It was expected they would reinforce the strategies taught in Group I (maximum) and yet provide a general training procedure for Group II (minimum). Unless otherwise mentioned, these tasks were designed specifically for this project by the researchers, or the existing products were used in a novel way.

This completes the description of the intervention program.

Group I (maximum intervention group) did the total program described above. This program involved approximately 14 hours per child. Group II (minimum intervention group) participated only in the filmstrip section of the program. This involved approximately three hours per child.

POSTTEST

At the end of the intervention period, all students were retested, beginning with the WISC and using all tests except the "Making X's Test". (It was thought that once the strategy for part 2 was known, it would contaminate the results for the retest.) The WISC was done by the same person who had done the pretest WISC administration. Again, all tests were administered individually and as much under the same circumstances as was possible.

At the conclusion of the program (on the last day), each child was given a small "treat" consisting of a bag of candy, peanuts or something similar.

Most of the children enjoyed the total program and were very co-operative and eager to participate. There were two students, however,

* 310 North Second Street, Minneapolis, Minn., 55401, U.S.A.

who seemed resentful and unco-operative and remained this way throughout the program. They eventually dropped out for medical reasons. At no time was any child forced to participate. If he wished not to come on any particular day, his wishes were respected, and he was given the opportunity again on another day. In this way, the children were given freedom of choice and freedom from pressure. It was thought that external pressure would reduce the effectiveness of the program. For most, the situation and controls were adequate. In fact, many children who were not in the program constantly asked "for their turn" and, except for two, the children were eager to participate.

Design

The basic design was a two group repeated measures design. All children were given the pre- and posttest, thus enabling the researchers to determine whether any changes had taken place.

Analysis

The first step in the analysis was to do analyses of variance. In addition, an analysis of covariance was performend on most measures. This is used to detect changes between pre- and posttesting due to the treatment effect.

The second step was to do a regression analysis of all other scores on the three scales of the WISC. This is to see what combination of tests will best predict the Verbal, Performance and Full Scale IQs on the WISC for both the pre- and posttest situations. This was felt to be the best way of validating diagnostic instruments in this situation.

This would allow a researcher not only to predict an achievement score, but also narrow down the problem areas to specific types of perceptual/cognitive skills.

The third step was to do a factor analysis of all the test scores. Due to the small number of cases and the large number of variables, it was not expected the factors would have any great stability, However, they should indicate a trend towards certain groupings and thus may be useful in this regard. This was done both on pre- and posttest scores.

All analyses were done on the IBM 360/67 system situated at the University of Alberta, using card input in a FORT AN format.

RESULTS

Analysis of Variance and Covariance Adjustment

This analysis showed changes for most of the measures. The results can be seen in Tables 4, 5, 6, 8, and 9 below. For Group I (Table 4), it can be seen that most of the measures improved over the intervention period. Notably, the WISC Verbal and Full Scale IQs did not, but the Performance section did. This perhaps can be attributed to the remediation program which, in some cases, dealt with the same underlying processes as the Performance subscales--Picture Completion, Block Design, Coding, Object Assembly, and Picture Arrangement. The Stroop word and color tests also show improvement, whereas the color-word scores did not. The two factors involved were word reading speed and color naming speed. These results could be explained that although neither words nor speed were emphasized, colors were, and the increasing familiarity with colors and improved coding abilities increased the speed of the responses. The last four measures in Table 4 represent differences between free and serial memory. These were not significantly reduced, but if one looks at the individual items on which they are based, one can see that both free and serial position memory improved, but that it is the difference between them that remains the same.

Table 5 presents the same results for Group II. As can be seen, only three measures reach significance at the .05 level, and two more show significant decreases in performance. In most of these cases, the improvement is somewhat less than for Group I. This tends to confirm that the intervention program is responsible for improvement.

The remaining results for Group II are inconsistent; in fact, some

Table 4
Experimental Group
Table Showing Means, Standard Deviations,
Pre vs. Post Correlations and F Ratios

	Pre		Post		Correlation	Probability	Analysis of Variance	
	Mean	SD	Mean	SD			F-Ratio	P
WISC Verbal	80.27	11.05	77.80	7.83	.749	.001	1.58	.229
Performance	93.93	11.67	100.20	11.82	.879	.001	16.46*	.001
Full Scale	85.33	11.31	87.07	9.31	.922	.001	2.05	.174
Acoustic Serial	11.60	7.42	18.47	5.63	.354	NS	11.54*	.004
Free	20.53	9.17	30.80	4.13	.311	NS	19.07*	.001
Semantic Serial	25.93	8.41	31.33	10.95	.676	.006	6.16*	.026
Free	34.13	8.79	40.27	7.34	.768	.001	16.47*	.001
Control Serial	53.67	18.79	67.53	21.25	.786	.001	15.21*	.002
Free	64.88	17.32	81.93	12.94	.609	.016	20.99*	.001
Acoustic-Control Serial	24.47	10.17	32.73	10.93	.693	.004	13.97*	.002
Semantic-Control Serial	27.87	8.91	34.80	10.69	.691	.004	10.84*	.005
Acoustic-Control Free	30.60	10.25	40.07	6.91	.651	.009	20.73*	.001
Semantic-Control Free	34.93	8.43	41.67	6.10	.500	.058	11.16*	.005
Progressive Matrices	21.67	3.84	24.87	3.10	.602	.018	14.30*	.002
MFD	4.07	2.79	3.93	3.01	.361	NS	0.02	.900
Stroop Word	36.13	13.20	30.93	11.54	.791	.001	5.71*	.031
Color	49.47	15.50	40.07	9.66	.418	NS	5.94*	.029
Color-Word	95.40	16.91	86.80	17.86	.557	.031	3.85	.070
Schonell	24.80	12.05	28.27	12.12	.990	.001	60.47*	.001
VSTM Serial	48.13	12.74	60.27	13.36	.642	.010	16.86*	.001

Continued . . .

Table 4
(continued)

	Pre		Post		Correlation	Probability	Analysis of Variance	
	Mean	SD	Mean	SD			F-Ratio	P
VSTM Free	75.40	9.27	85.07	9.06	.731	.002	28.97*	.001
CMC	9.27	3.43	14.67	3.65	.380	NS	26.21*	.001
FCT	11.27	2.46	13.27	1.73	.762	.006	16.80*	.001
Making X's 1	-	-	-	-	-	-	-	-
Making X's 2	-	-	-	-	-	-	-	-
Total Acoustic Serial	36.07	14.77	51.20	15.70	.737	.002	26.08*	.001
Total Semantic Serial	53.80	15.93	66.13	21.11	.739	.002	10.54*	.006
Total Acoustic Free	51.13	16.78	70.87	9.82	.751	.001	41.83*	.001
Total Semantic Free	69.07	15.26	81.93	12.97	.764	.001	23.46*	.001
Serial	89.88	29.63	117.33	36.26	.754	.001	18.45*	.001
Free	120.20	31.48	152.80	22.16	.773	.001	36.81*	.001
VSTM Difference	27.27	5.90	24.80	7.26	.448	NS	1.73	.209
$X_2 - X_1$	-	-	-	-	-	-	-	-
Free - Serial	36.33	11.19	35.47	19.37	.214	NS	0.90	.358
Acoustic (Free - Serial)	15.07	5.69	19.67	9.34	.341	NS	3.55	.080
Semantic (Free - Serial)	15.267	7.98	15.80	10.81	.253	NS	0.03	.867

*Significant increase in performance

Table 5
Control Group (II)
Table Showing Means, Standard Deviations,
Pre vs. Post Correlations and F-Ratios

	Pre		Post		Correlation	Probability	Analysis of Variance	
	Mean	SD	Mean	SD			F-Ratio	P
WISC Verbal	77.75	12.15	76.20	10.48	.878	.001	1.35	0.259
Performance	92.55	13.39	97.55	12.23	.763	.001	6.02*	0.24
Full Scale	82.95	12.27	85.10	11.79	.900	.001	3.02	.098
Acoustic Serial	14.45	5.32	12.30	6.33	.671	.001	3.78	.067
Free	24.85	5.80	23.45	5.03	.388	.091	1.03	.323
Semantic Serial	22.25	10.67	24.80	11.09	.791	.001	2.49	.131
Free	34.45	9.11	35.15	7.65	.510	.022	0.13	.720
Control Serial	57.90	19.38	53.85	22.25	.728	.001	1.28	.272
Free	73.80	13.30	72.90	12.86	.534	.015	0.10	.759
Acoustic-Control Serial	29.35	9.44	25.50	10.97	.689	.001	4.23*	.054**
Semantic-Control Serial	28.60	10.73	28.35	12.12	.637	.003	0.01	.913
Acoustic-Control Free	36.10	7.67	35.35	6.89	.505	.023	0.20	.658
Semantic-Control Free	37.70	6.54	37.05	7.43	.427	.061	0.14	.710
Progressive Matrices	23.90	4.15	26.25	3.53	.561	.011	7.93*	.011
MFD	3.90	2.79	3.90	3.28	.544	.013	0.00	1.000
Stroop Word	30.70	9.63	28.55	9.93	.849	.001	3.31	.085
Color	44.05	7.51	43.15	10.82	.711	.001	0.27	.611
Color-Word	99.70	30.63	88.50	18.83	.598	.005	3.95	.061
Schonell	31.20	9.94	29.70	10.21	.889	.001	1.90	.185
VSTM Serial	51.15	14.74	52.50	16.15	.671	.001	0.22	.645

Continued . . .

Table 5
(continued)

	Pre		Post		Correlation	Probability	Analysis of Variance	
	Mean	SD	Mean	SD			F-Ratio	P
VSTM Free	79.10	6.14	81.85	8.72	.609	.004	2.96	.101
CMC	12.30	3.95	14.35	3.69	.654	.002	7.87*	.011
FCT	12.45	1.86	12.60	2.50	.40[illegible]	.076	0.07	.790
Making X's 1	-	-	-	-	-	-	-	-
Making X's 2	-	-	-	-	-	-	-	-
Total Acoustic Serial	43.80	13.504	37.80	15.62	.729	.001	5.77*	.027**
Total Semantic Serial	50.85	20.05	53.15	22.15	.805	.001	0.57	.461
Total Acoustic Free	60.95	12.88	58.80	10.48	.508	.022	0.63	.436
Total Semantic Free	72.15	14.18	72.20	13.56	.530	.016	0.00	.980
Serial	94.65	32.509	90.95	36.61	.840	.000	0.65	.429
Free	133.10	25.16	131.00	22.48	.551	.012	0.16	.691
VSTM Difference	27.95	11.63	29.35	10.73	.530	.016	0.32	.581
$X_2 - X_1$	-	-	-	-	-	-	-	-
Free - Serial	38.45	18.71	40.05	22.05	.490	.028	0.11	.741
Acoustic (Free - Serial)	17.15	8.15	21.00	9.98	.224	.342	2.17	.157
Semantic (Free -Serial)	21.30	12.71	19.05	13.66	.592	.006	0.67	.422

*Significant increase in performance
**Significant decrease in performance

of the measures reflect a small decrement in performance. One can see they are mainly in the areas that were not remediated to any extent.

It should also be noted that the MFD test did not change for either group. This would suggest this measure is independent of teaching and does, in fact, represent some basic feature of the cognitive process. However, the rather low correlations between pre- and posttest suggest the measure is not as stable as it could be. Its main contribution may be in combination with other tests.

The highest pre-post correlation was in the Schonell. Group I increased significantly while Group II did not. This would suggest the Group I children retained their rank position in their group and improved overall scores. This test appears reliable for use by itself and appears very sensitive to change in performance.

Both groups again showed improvement on the Progressive Matrices, with Group I showing the greater change. However, as mentioned, improvement can not be really determined from raw scores for reasons previously mentioned. However, if one compares Table 7 to Table 2, one can see that there are now 24/35 children above the 50th percentile, whereas there were only 21/38 before. These children appear somewhat above average on this measure after the intervention.

It may also suggest that some children are not achieving for different reasons. Some children may not be achieving for lack of ability, while others for reasons such as poor learning strategies or poor motivation.

The Cross-modal Coding score improved for both groups, but again more for Group I than Group II. Table 8 shows the results obtained when the groups were adjusted for initial differences and then

Table 6. Adjusted Means (Final)

Test	Maximum Intervention Group I	Minimum Intervention Group II	p
Acoustic Serial	19.3	11.7	0.001
Acoustic Free	31.3	23.0	0.001
Semantic Free	40.4	35.1	0.018
Control Serial	69.6	52.3	0.002
Control Free	84.4	71.1	0.002
Acoustic Control Serial	34.9	23.8	0.001
Semantic Control Serial	35.1	28.1	0.031
Acoustic Control Free	41.5	34.3	0.002
Semantic Control Free	42.3	36.6	0.015
Schonell	31.8	27.1	0.002
VSTM Serial	61.5	51.8	0.020
VSTM Free	86.7	80.6	0.018
Total Acoustic Serial	54.8	35.1	0.001
Total Semantic Serial	64.6	54.3	0.043
Total Acoustic Free	73.3	57.0	0.000
Total Semantic Free	82.9	71.4	0.004
Serial	119.9	89.0	0.001
Free	156.6	128.1	0.001

Table 7
Percentile Scores on
Ravens Progressive Matrices
for Posttest

Percentile	No. of Cases	
90 - 100	8	
80 -	2	
70 -	3	24
60 -	4	
50 -	7	
40 -	2	
30 -	0	
20 -	5	11
10 -	3	
0 - 10	1	

Table 8
Analysis of Variance
with Covariance Adjustment (Pre-Post)
Between Groups I and II

	F-Ratio	P
WISC Verbal	0.002	NS
Performance	0.39	NS
Full Scale	0.001	NS
Acoustic Serial	15.63*	.001
Free	25.47*	.001
Semantic Serial	1.65	NS
Free	6.22*	.018
Control Serial	11.20*	.002
Free	11.38*	.002
Acoustic Control Serial	14.32*	.001
Semantic Control Serial	5.07*	.031
Acoustic Control Free	11.49*	.002
Semantic Control Free	6.65*	.015
Progressive Matrices	0.09	NS
Schonell	11.47*	.002
VSTM Serial	6.00*	.020
VSTM Free	6.20*	.018
CMC	2.69	NS
FCT	3.14	.085
Making X's 1	-	-
Making X's 2	-	-
Total Acoustic Serial	24.91*	.001
Total Semantic Serial	4.42*	.043
Total Acoustic Free	28.95*	.001
Total Semantic Free	9.62*	.004
Serial	15.83*	.001
Free	21.12*	.001
VSTM Difference	2.12	-
$X_2 - X_1$	-	-

*Significant increase in performance

Table 9. Means and Standard Deviations
(Pre and Post, Full Group)

	Pre		Post	
	Mean	SD	Mean	SD
WISC Verbal	78.05	11.71	76.89	9.47
Performance	93.39	12.25	98.69	12.13
Full Scale	83.66	11.58	85.94	10.84
Acoustic Serial	13.21	6.38	14.94	6.77
Free	22.87	7.71	26.60	5.91
Semantic Serial	23.39	9.81	27.60	11.50
Free	33.74	9.27	37.34	7.94
Control Serial	55.42	19.26	59.71	22.86
Free	69.18	16.34	76.77	13.65
Acoustic-Control Serial	26.74	10.06	28.60	11.52
Semantic-Control Serial	28.15	9.96	31.11	11.96
Acoustic-Control Free	33.18	9.52	37.37	7.29
Semantic-Control Free	36.26	7.78	39.03	7.26
Progressive Matrices	23.08	4.05	25.66	3.42
MFD	3.82	2.80	3.91	3.56
Stroop Word	32.97	11.18	29.57	10.20
Color	46.37	11.51	41.83	10.45
Color-Word	97.29	25.77	87.77	18.44
Schonell	27.82	11.21	29.09	11.09
VSTM Serial	49.45	14.05	55.83	15.50
VSTM Free	77.87	7.80	83.23	9.01
CMC	10.79	4.09	14.49	3.68
FCT	12.08	2.19	12.89	2.23
Making X's 1	42.08	18.56	-	-
Making X's 2	56.84	18.93	-	-
Total Acoustic Serial	39.95	14.54	43.54	17.00
Total Semantic Serial	51.58	18.04	58.71	22.64
Total Acoustic Free	56.05	15.77	63.97	11.82
Total Semantic Free	70.00	15.11	76.37	14.15
Serial	91.53	31.02	102.26	38.73
Free	126.05	29.52	140.34	24.81
VSTM Difference	28.42	9.89	27.40	9.66
$X_2 - X_1$	14.87	9.10	-	-
Free - Serial	34.53	16.08	38.09	21.07
Acoustic (Free - Serial)	16.11	7.11	20.43	9.73
Semantic (Free - Serial)	18.42	11.06	17.66	12.62

compared to each other on the final measure. The differences on these measures would be the ones due to the total intervention program not including the filmstrips.

The main findings were that both visual and auditory memory showed great improvement. This was true for both serial and free recall. It was interesting to note that the Schonell scores improved even though no reading was taught nor done in this part of the remedial program. This will be discussed later in this paper. Several other scores, notably the Cross-modal Coding and FCT, were significant at approximately the .1 level. The trend was in the expected direction. It was thought that the small sample was the reason for non-significance rather than unreliability of the effect.

The MFD and Stroop scores were not included in the covariance analysis as they are error scores and the covariance analysis tended to obscure the decreases (improvements) rather than bring them out. The same was true for the difference scores (the last four items done on the pre-post test). By considering the means for the Stroop test, one can conclude the improvements are significant for Group I on the word and color-word tests. The MFD showed no improvement on any analysis for either group.

Stepwise Regression

The stepwise regression program allowed one to choose the level at which predictors would be accepted and dropped in the calculation of the regression equation. For this part, it was decided to accept all predictor variables regardless of their contribution and not to allow any to be dropped. This was done both for pre- and post scores

predicting the three scales of the WISC. It was decided to accept the four best predictors in each case. The results can be seen, along with the prediction equation, in the following tables. The predictors are listed in order of contribution.

As can be noted from studying Table 9, the predictors of the WISC subscales do not remain completely stable from pre- to posttest. In the WISC Verbal scale, the Schonell test emerges as the most stable predictor. The Visual Short-term Memory serial score remains in the same rank order. It is also noted that the posttest predictors are largely verbal measures involving word recognition, word memory and visual serial position memory--generally sequential abilities. These are precisely the concepts involved in language usage and, therefore, in most school performance.

In the WISC Performance predictors are more stable. Progressive Matrices, VSTM Free and the FCT scores retain their relative prediction power from pre- to posttest. These measures are largely spatial and visual and, therefore, more dependent on simultaneous strategies.

The predictor of the WISC Full Scale IQ showed the most variation from pre- to posttest. In fact, no one test was used as a predictor in both cases.

The instability could be due to two possible factors. First, the tests themselves may be unstable. Secondly, there may have been enough change in the pre-post scores to produce these differences.

The second alternative seems the more reasonable. If, as has been indicated, the maximum treatment group has improved more than the other group, then one can expect a change in the intercorrelational structure of the results. One could, therefore, expect some change. If the

Table 10. Predictors of the WISC

	Test	B Weight		
PRETEST				
WISC Verbal	Acoustic Ser. Pos.	0.3755	Constant	54.948
	Schonell	0.2092	% Total Var.	40.884
	X_1	-0.0917	p	.001
	VSTM Ser. Pos.	0.1243	$\hat{Y}$*	9.66
			R**	.64
WISC Performance	Progressive Matrices	1.8175	Constant	63.044
	Stroop Word	-0.2351	% Total Var.	47.894
	VSTM Ser.	0.2234	p	0.0002
	FCT	-1.2329	$\hat{Y}$	9.48
			R	.69
WISC Full Scale	Acoustic Ser. Pos.	0.3514	Constant	69.326
	Stroop Word	-0.2227	% Total Var.	44.78
	Progressive Matrices	0.8712	p	0.0005
	FCT	-1.0320	$\hat{Y}$	9.23
			R	.67
POSTTEST				
WISC Verbal	Schonell	0.3475	Constant	47.425
	Sem. Free	0.4330	% Total Var.	55.82
	Acoustic Free	-0.3583	p	0.00005
	VSTM Ser. Pos.	0.1649	$\hat{Y}$	6.7951
			R	.74
WISC Performance	Sem. Free	0.3521	Constant	21.585
	Progressive Matrices	1.2426	% Total Var.	62.7588
	VSTM Free	0.4220	p	0.000004
	FCT	-1.3037	$\hat{Y}$	6.7951
			R	.79
WISC Full Scale	Sem. Free	0.5391	Constant	27.555
	Schonell	0.2525	% Total Var.	59.7077
	VSTM Free	0.3649	p	0.000012
	Acoustic Free	-0.3204	$\hat{Y}$	7.43
			R	.77

*Standard error of predicted Y
**Multiple correlation coefficient

child has been brought closer to his level of functioning, the post scores should be the most reliable.

Factor Analysis

A factor analysis was performed on 10 variables on the combined group for both pre- and posttest situations.

Pretest results (Table 11) show three natural factors emerging. These were labeled Successive, Speed and Simultaneous, respectively, on the basis of the marker tests used. Das (1973, in press) summarized the studies he has performed in this area using generally the same 10 variables. The results of the present study are very agreeable to the former studies, and show very clear results considering the small size of the sample (N = 35).

Table 11. Rotated Factors (Varimax) for 10 Cognitive Tests (Decimals omitted)

Variable	I	II	III
WISC Verbal	479	639	-029
Performance	431	574	235
Progressive Matrices	678	-047	458
MFD	074	-287	-801
Stroop Word Reading	-056	-717	112
VSTM	065	707	435
CMC	584	037	162
FCT	330	-165	743
Serial Recall	840	287	-066
Free Recall	787	352	000
	2.662	2.071	1.692

For factor I, the two highest loadings were serial and free recall. Das has shown these indicate a successive processing factor. On the second factor, the highest loading was on the Stroop Word reading and this was taken to indicate speed. The highest loading on factor III was the MFD test which is generally taken to suggest spatial or simultaneous processes.

Factor I, besides the serial and free recall, also included cross-modal coding and Progressive Matrices. The CMC, although sometimes considered a speed task (Das, 1973, in press), clearly also has a serial element, and the results here indicate that it was processed much in the same manner as other auditory stimuli (words). It has also been previously noted that Progressive Matrices can load on a successive factor although it may appear to be a spatial task. Dart and Prudham (1957) found that Nepalese children prefer successive processing in situations where American children use simultaneous strategies. Das (1973, in press) has also found that Orissa children (India) use sequential processing as a dominant function and thus Progressive Matrices load on the serial factor. For the Hobbema children, although they have excellent spatial skills, the variation in scores seems to be determined by their ability to process information sequentially. This is consistent with other findings in this study.

Factor II includes not only the Stroop Word (speed) but also VSTM and to a lower degree the WISC Verbal and Performance scores. The VSTM certainly has a speed component, and it seems that variation in performance on this test is determined by the ability to process information rapidly. Again, this is consistent with other findings as, if the search and recall strategies are inconsistent, they will tend to

produce varied performance, if not in the untimed tests, in the timed sections of tests. Erratic strategies are much more affected by time limits and mere chance determines whether the recall and search strategies will coincide, and the person's internal search for the correct answer may be interrupted by timing. This may hold true for subtests in the WISC. Many of them are timed, and others are indirectly limited memory decay associated with time. Perhaps the Hobbema children "take their time" in tasks which involve verbal manipulation and in memory factors, and the performance on these tests is determined by speed of processing rather than simultaneous or successive abilities.

Factor III has its highest loadings on MFD and FCT. These are both highly spatial (simultaneous) tasks and their close correspondence suggests that memory (from MFD) does not affect the results for spatial processes, indicating that the results are due to variations in simultaneous processes rather than spatial memory. Progressive Matrices and VSTM loadings on this factor suggest that variation in simultaneous processes are used in visual tasks.

Posttest results for the factor analysis are presented in Table 12.

The results were very similar to the previous results except they emerged in a different order. They were labeled Successive, Simultaneous and Speed, respectively. It should be noted at the outset that the total communality has increased from 68% to 74%. This means that the variance accounted for has increased in the posttest. One reason may be that the remediation of learning difficulties has brought some children closer to their potential level and thus

Table 12. Rotated Factors (Varimax) for 10 Cognitive Tests (Decimals omitted)

Variable	I	II	III
WISC Verbal	347	364	665
Performance	515	391	547
Progressive Matrices	253	544	276
MFD	-232	-720	-110
Stroop Word Reading	036	136	-833
VSTM	401	499	303
CMC	749	-062	252
FCT	-034	848	-227
Serial Recall	881	317	026
Free Recall	892	293	022
	2.798	2.277	1.732

presenting a more accurate picture of their abilities as seen through test results.

There have been several important shifts. The Progressive Matrices now loads on the simultaneous factor, suggesting that the amelioration of learning deficits in successive strategies has now returned the variations in Progressive Matrices scores more to variations in simultaneous (or spatial) ability. This seems much more in accord with the nature of the test. It should be noted that this was accompanied by an improvement in the scores for the Progressive Matrices as indicated on page 22 of the main text.

Another important shift was seen for the VSTM which now loads more appropriately on both the serial and spatial factors instead of speed. It seems the introduction of consistent search and recall

strategies has eliminated speed as a factor in this test. As has been mentioned, the VSTM seems to have both serial and simultaneous elements, and the present factor loadings seem more appropriately placed. Although speed is certainly a factor in some tests, the limitations imposed by it can be reduced by the introduction of efficient strategies. It should be noted that the shift in loadings was accompanied by a highly significant increase in the scores on the VSTM. This again suggests the strategies are more appropriate at the posttest situation than in the pretest situation.

On the other hand, although scores for the serial and free recall showed highly significant improvement, the factor loadings did not shift. If anything, they became slightly higher on the successive factor. This, too, suggests that auditory-verbal tasks are determined by successive processes, and that low scores were limited purely by lack of adequate successive strategies.

These results tend to reiterate and support the conclusion drawn to this point: that cognitive strategies are learned and can therefore be changed. Implicit in these findings is the assumption there are strategies must appropriate to certain tasks. Inappropriate strategies, it follows, lead to reduced performance. Through study of performance on cognitive tests, a profile can be determined and on this basis, a remediation program can be designed.

DISCUSSION

The analysis of covariance has shown improvement in two main areas: visual and auditory short-term memory. It is felt the reason for these improvements was the concentration on sequential strategies in the remediation program. As was demonstrated earlier, sequential strategies and simultaneous strategies are required for most cognitive operations. However, some tasks require more of one than the other.

A deficit in either of the areas can reduce the efficiency of the cognitive operation. The person must or does compensate by using a strategy inappropriate to the task and consequently missing important features inherent within the task.

This can, under certain circumstances, produce a "fresh point of view" or thinking of an unusual fashion--perhaps creative thinking. However, in most school tasks, the situation does not allow for varied approaches. Words must be read in a fixed order, arithmetical operations must be done in a fixed order. Disruption of the series of many of these operations results in loss of information and subsequent errors in problem solving.

The children participating in this research proved to have well-developed simultaneous strategies that they substituted for sequential ones. This was noticed in the testing sessions prior to intervention. Serial tasks like memory, reading were attacked with a spatial approach--that is, the eye simply followed stimuli that attracted its attention. In the case of the visual short-term memory, the search strategy seemed somewhat random and inconsistent. The recall also proceeded in the same way.

In the serial learning test, order did not seem important to the children. The reason for the lack of sequential strategies was not clear from this part of the study; however, the answer may be in the different cultural milieu from which they come. This has been suggested before (Das, 1973, in press). Their culture may have different emphases, different modes of thought and different approaches to problems--methods more appropriate to their traditional way of life than to the predominant society of today. Perhaps the use of two unrelated languages tends to produce confusion.

Informal discussion with the teachers indicated that the children manifested many of these problems in a classroom situation. Ordering seemed to be their main failing.

The main implication of these results is the demonstration that sequential strategies can be taught through an appropriate teaching procedure. This again serves to re-emphasize the need for careful diagnosis and even more careful planning of teaching and remediation.

It was pleasing to note that even this short-term intervention could produce significant results in the teaching of cognitive learning strategies. Logically, the next step would be to demonstrate that these new strategies are lasting, and they do transfer to the more complex learning situation. This, however, was beyond the scope of this particular research and remains to be demonstrated.

The study does indicate there can be a carry-over to other learning and cognitive tasks. Improvement in the Schonell Word Recognition test is suggestive of this process. As has already been

mentioned, reading is a task based mainly on the use of the left to right, top to bottom ordering of perception. Although reading was not taught or used, the required strategy was taught in the VSTM training program. The children's verbal-reading problem does indeed seem to be symptomatic rather than basic; one that is based on the lack of an appropriate strategy rather than lack of ability.

The analysis of variance demonstrated that certain other abilities can change. On the WISC, the Performance section showed significant improvement for both groups. It seems evident the Performance abilities change more quickly than do verbal abilities--it takes time to translate new abilities into information, vocabulary, and verbal reasoning strategies. Perceptual motor tasks can also be changed, as is demonstrated by the FCT. Even the Progressive Matrices Scores can be improved along with the cross-modal coding ability. All the abilities measured by these tests are important to the learning ability of these children and it follows that if they can be improved so can the learning abilities of any particular group of children. The results of intervention strongly suggest that school achievement could be improved through diagnostic and remediation of cognitive strategies.

One may ask, "How does this affect the teacher, the school and the parents?" The question is not easy to answer from the vantage point of this study. The nature of the sample and the remediation was very specific. It was limited to grade 3 and 4 students who had proven to be underachievers. Some very specific problem areas were uncovered and it was demonstrated that these areas could be remediated. It does not seem possible to generalize to other grade 3 students as they have

proven to be successful in the regular school curriculum and thus may not have similar difficulties. It does seem likely that these students could be isolated earlier, perhaps at the kindergarten or grade 1 level, and aided before the children begin to face the frustration of failure in their school career.

One now touches on a broader, more philosophical issue: "Should the children be molded to fit the curriculum, or should the curriculum be modified to fit the student and the culture?" The question is too involved to be answered here. One could observe, however, that the processes remediated are basic and that they are not bound to any one curriculum or even subject area. The remediation strategies could be incorporated into a curriculum, or could be given separately.

It cannot be assumed that this is the only form of remediation that will produce significant results; however, it has the advantage of being based on a well-documented theoretical structure; and it has the further merit of not requiring a large number of specialized materials. The methods used could be easily incorporated into basic teaching techniques; and, with some guidance, used by the classroom teacher, in conjunction with a remediation specialist. As with any special program, care must be taken in making the original diagnosis. Ideally, diagnosis should be made on an individual basis, and assigned one of several categories, for appropriate remediation. With our increasing knowledge in special education, it is now possible to proceed in this fashion.

A prerequisite, however, is a clear understanding of the basic

cognitive strategies underlying the learning process. The study suggests that it will invariably lead to an earlier diagnosis and remediation of learning difficulties, and has the potential of being integrated with teaching practices.

If it turns out that cultural differences result in differing cognitive strategies, as has been demonstrated by Lesser, Fifer and Clark (1965), then a decision must be taken about the manner in which the differences are to be handled. In any case, the scope is broader than just that of the school. The decision must be made involving people at all the levels at which the effect will be felt.

To conclude, Gordon and Wilkerson (1966) make one of the more perceptive statements in discussing the future of education:

> The challenge of the new condition is to match the formal learning experience to this new reality and to meet the new opportunity of a freer social system with a new approach to educational methods and to a new organization of society. The great danger is to pretend that there has been no fundamental change and to go on using methods that were not completely useful even in the old days, thus missing an opportunity to advance learning and behavior when such an advance is not only possible but desperately needed. (p. 189)

SUMMARY

Approximately 40 children designated as low achievers and in the grade 3 and 3-4 classes at Ermineskin School at Hobbema were given extensive testing at the beginning of the 1971 term. On the basis of the WISC and other basic cognitive tests an analysis of learning strategies was performed. It was found that these children were deficient in sequential learning processes.

The children were split into two groups matched for intelligence on the WISC for the purpose of intervention. A minimum and a maximum remediation program was designated. The remediation was performed individually or in small groups for a period of seven weeks during the school year. The minimum condition involved a total of about three hours per child and the maximum condition involved approximately 14 hours per child.

The children were then retested on all relevant tests given before intervention. The results were analyzed by analysis of variance, covariance, stepwise regression analysis and factor analysis.

The main finding was a significant improvement in auditory and visual memory, in the group receiving maximum remediation, when compared with the minimum remediation group.

These findings were important: they indicate that learning strategies are not immutable, but can indeed be modified by appropriate remedial programs to enhance cognitive competence.

Educational implications were discussed.

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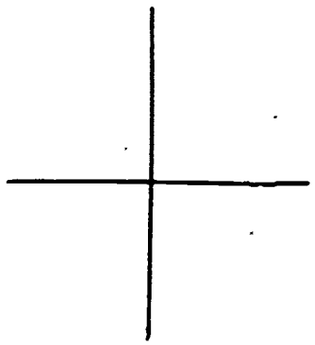
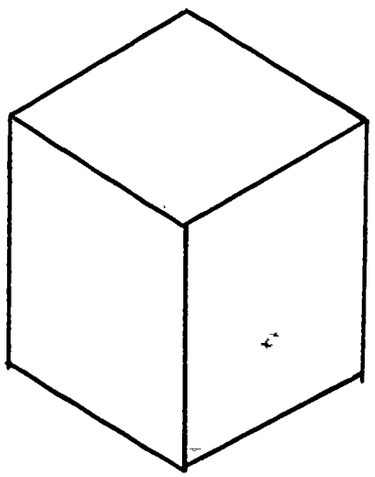
APPENDIX A

An easy and a difficult item from the Figure Copying Test

APPENDIX A

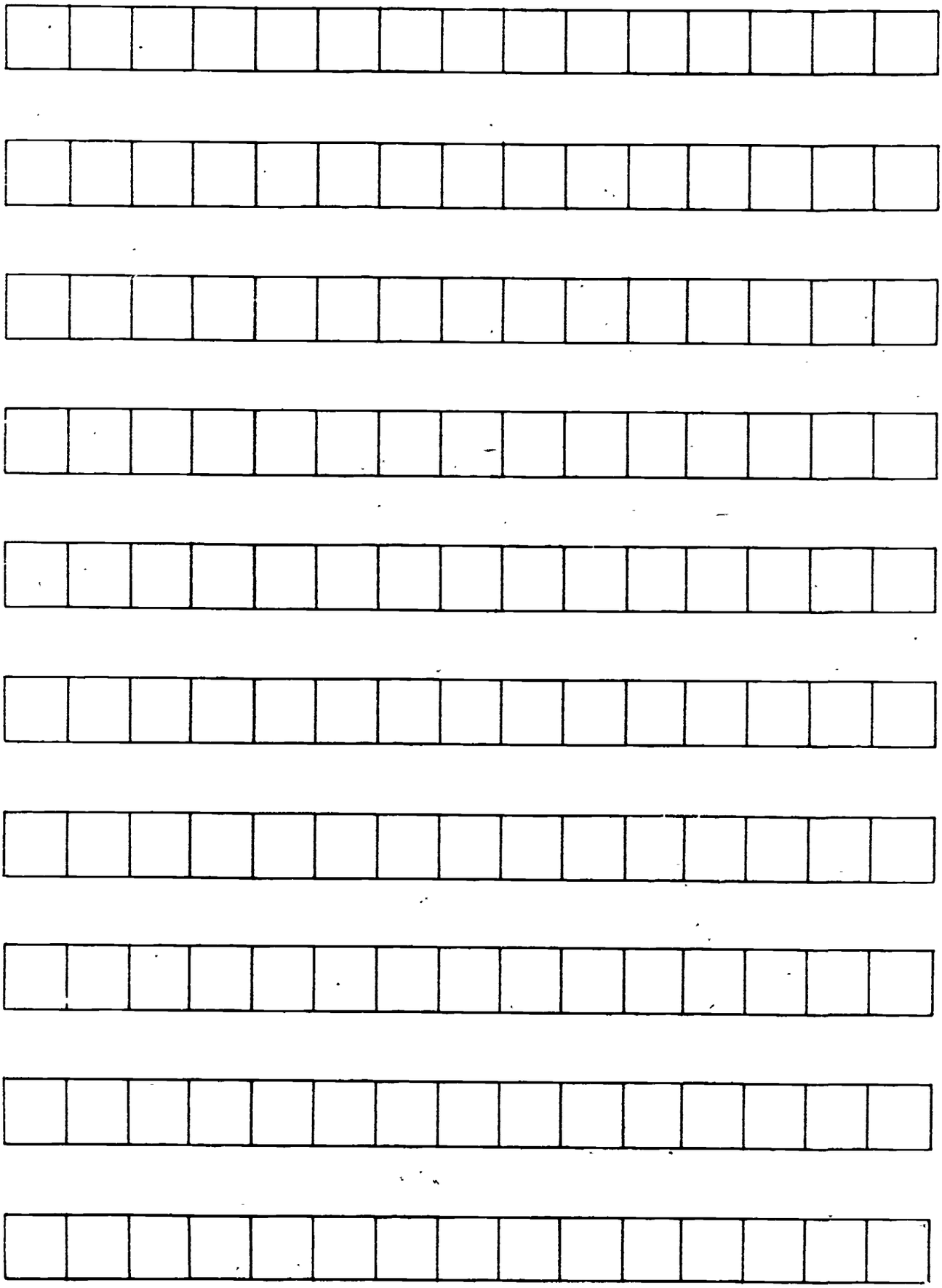


APPENDIX A



APPENDIX B

Answer Sheet for the Making X's Test



APPENDIX C

Scoring Sheet for the Stroop Test

APPENDIX C

COLOUR-WORD CHART

Red	Yellow	Red	Green	Blue
Blue	Green	Blue	Yellow	Red
Blue	Green	Yellow	Red	Blue
Green	Red	Blue	Green	Yellow
Red	Yellow	Red	Blue	Green
Blue	Red	Yellow	Green	Blue
Green	Yellow	Blue	Red	Yellow
Blue	Green	Yellow	Red	Green

Time Start _____

Finish _____

Difference in secs. _____

Stroop Colour Test

S's Name _____ Sex _____

Age _____

Other data

Time taken for Words _____

Colours _____

Colour-Word _____

APPENDIX D

Answer Sheet for the Raven Progressive Matrices

Answer Sheet for

APPENDIX D

RAVEN PROGRESSIVE MATRICES — 1947

Sets A, A_B, B

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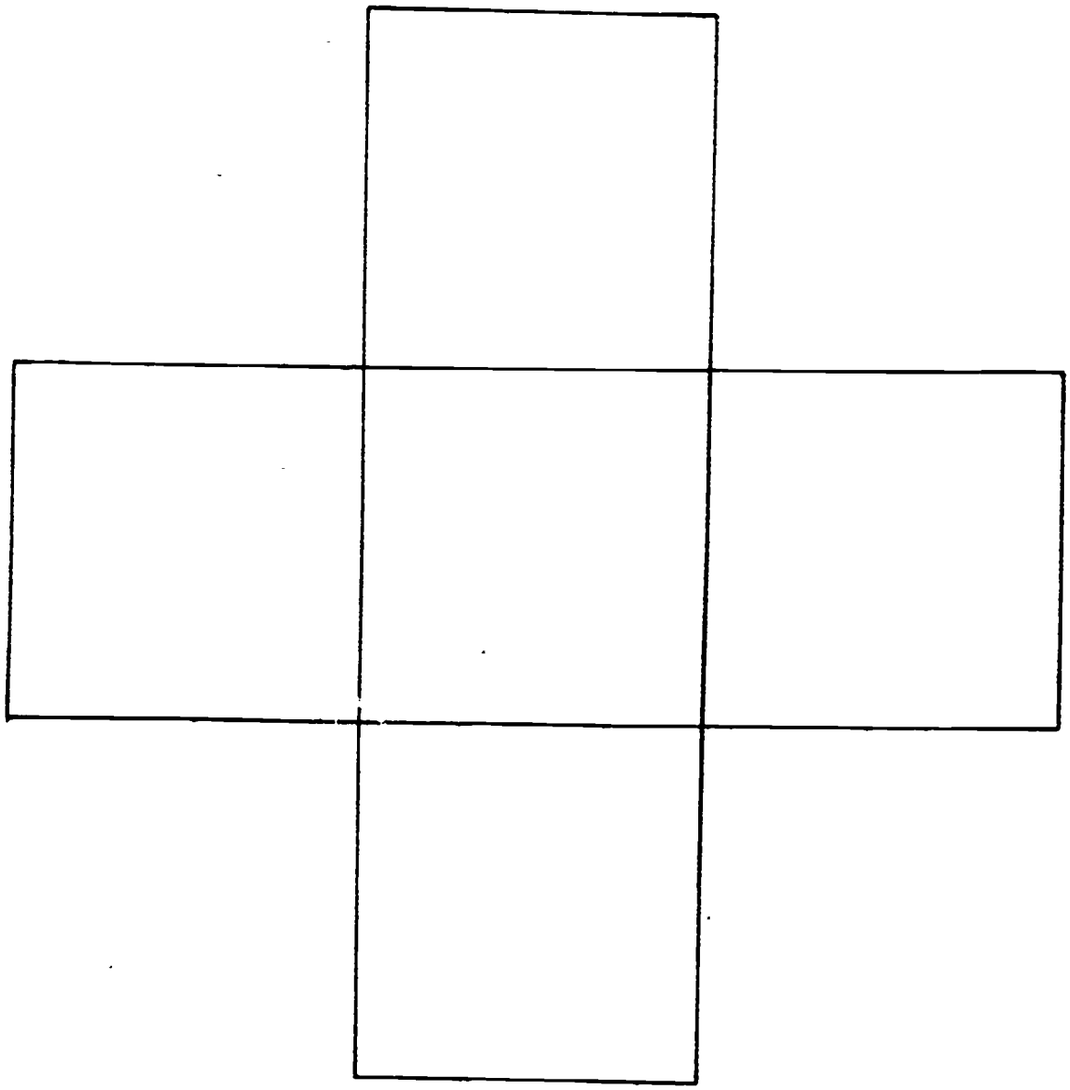
APPENDIX E

Sample Answer Sheet and Stimuli Numbers for the Visual Short-Term Memory Test

APPENDIX E



APPENDIX E

1.	9	8	4	5	1
2.	9	6	3	1	5
3.	2	4	9	7	1
4.	7	2	3	9	6
5.	7	5	2	9	4
6.	4	8	9	3	1
7.	5	4	8	1	6
8.	9	7	5	3	1
9.	3	5	6	1	8
10.	7	3	9	8	4
11.	3	8	6	9	4
12.	5	3	6	1	9
13.	6	3	2	9	5
14.	2	3	5	9	6
15.	8	1	6	5	3
16.	1	3	5	8	9
17.	2	4	5	8	1
18.	8	3	6	5	1
19.	1	5	6	3	8
20.	5	9	2	3	6

APPENDIX F

Word lists presented in the Serial Learning Test. (This was also used as the scoring sheet.)

APPENDIX F

Word lists presented in the Serial Learning Test. (This was also used as the scoring sheet.)

	Acoustic	Sematic
1.	key hot cow pen	key hot cow pen
2.	cab cat mad can	wide large big high
3.	day cow wall bar	day cow wall bar
4.	man mad pan mat	long big fat great
5.	pen wall book key	pen wall book key
6.	book bar wall hot	book bar wall hot
7.	key few hot book	key few hot book
8.	can pan tap cab	high fat huge wide
9.	tap mat pan cat	huge great fat large
10.	key day cow bar	key day cow bar
11.	cab cap cat tap	wide tall large huge
12.	bar pen few day	bar pen few day
	45 second rest	45 second rest
13.	cab man mad map	wide long big great
14.	mat can cap man	great high tall long
15.	few pen hot wall	few pen hot wall
16.	day cow bar wall	day cow bar wall
17.	cap pan cat can	tall fat large high
18.	man mad mat pan	long big great fat
19.	few day cow book	few day cow book
20.	cap man mad tap	tall long big huge
21.	key book day hot	key book day hot
22.	cab tap man cat	wide huge long large
23.	can cap pan mad	high tall fat big
24.	pen few wall cow	pen few wall cow