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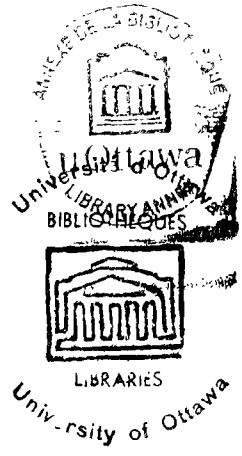
THE ADMINISTRATION OF THE GOODENOUGH DRAW-A-MAN TEST TO CANADIAN ESKIMOS

par: Florien E. Ouellette

Thesis presented to the School of Psychology and Education of the University of Ottawa as partial fulfillment of the requirements for the degree of Master of Arts in Psychology



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CURRICULUM STUDIORUM

Florian Edouard Ouellette was born in Ansonville, Ontario, on April 2, 1934.

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INTRODUCTION

Trying to provide the Eskimo population with a curriculum and school facilities comparable to the rest of the country is not an easy task. Inclement weather, breakdowns in communication, paucity of teachers willing to isolate themselves from the larger centres, are some of the factors which present a challenging situation to those dedicated to the education of Eskimos.

Assessing the Eskimos' progress and achievement level can be equally difficult. They have a culture of their own, their environment varies greatly from that of other Canadians to the south. With the foregoing in mind, it was proposed that an intelligence test be standardized specifically to appraise the mental development of Eskimo school children. An individual test would have been ideal but would have entailed an experiment of monumental proportions. Instead, a group test, namely the Goodenough Draw-A-Man Test, served as the experimental tool. Apart from being a non-verbal test, its many advantages included administration directions that could be mastered quickly by any teacher, thereby precluding the need for one person to travel throughout the Northwest Territories. It is relatively easy to score, can be given to large groups, and it was felt that cultural factors could be overcome.

An attempt was therefore made to blanket the entire northern portion of Canada in an effort to reach as many Eskimo pupils as possible.

Perhaps the Goodenough Test is not suitable for Eskimos. It may be acceptable with reservations. In any case, the problem was worth investigating not only for what it could reveal about the performance of Eskimos on the Draw-A-Man Test but for the opportunity it presented to provide the teachers with a tool to assess their present pupils and those to come.

It is hoped that the establishment of local norms undertaken in this project will prompt additional studies on the Draw-A-Man Test for Eskimos and other aspects of Eskimo education generally.

CHAPTER I

REVIEW OF THE LITERATURE

1. Drawings as an Indicator of Mental Growth in Children.

Since the last quarter of the nineteenth century, children's drawings have aroused an ever increasing interest on the part of educators and psychologists, for it was soon recognized that the activity of drawing as done by children, when compared to the performance of adults, is a totally different experience. The adult, as a rule, tries to express in line and form the characteristics of the world around him. The child, on the other hand, is not too concerned about the exact size and form of objects that he is about to depict. Especially with the younger group, the activity of drawing is much more important than the finished product. Repeated experiments have shown that they often ignore the model placed before them. Kerschensteiner[1] found that children accustomed to drawing the human figure in the full face position will continue to do so even if a model is placed before them in profile and they seem quite

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1 D.G. Kerschensteiner, Die Entwickelung der zeichnerischen Begabung, Munich, Gerber, 1905, 508 p. Quoted by F.L. Goodenough, in "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 25, No. 5, issue of May 1928, p. 272-283.

unaware of the discrepancy in the results. Using an apple with a hatpin stuck through it, it was found that only the older children who could grasp the concepts of perspective, direction and transparency performed well. The others could not indicate correctly on their drawings where the end of the pin emerged and many drew the whole pin despite the fact that part of it was concealed by the apple. In other words the child draws what he knows rather than what he sees. There is a close relationship between his concept of a house and his drawing of a house regardless of what house serves as a model. As the child matures, however, his sense of perspective and symmetry will develop to a greater degree; line treatment, details and the overall quality of his drawing should improve. Thus we see that drawing for the child reflects to some extent his mental growth and concept development.

The amount of time that research workers have spent analyzing and compiling data on children's drawings and the functioning of the child's mind would astonish the novice and no attempt will be made here to encompass nor review all aspects of drawings. Educators, sociologists, psychologists, art teachers, all have contributed and many are interested in keeping abreast of recent findings.

Drawings encroach on many fields; art, revealing trends, characteristics of age groups, preference of drawing

material, keenness of observation and ability to reproduce; anthropology, the main concern of which is intra and inter cultural variations, sex, racial and individual differences; psychiatry, either to study motor behaviour or as a projective tool aimed at exploring the inner world of the child in an attempt to gain knowledge on the formation of conflicts and personality traits. Drawings can also be a method of checking the effectiveness and progress of therapy with maladjusted individuals. In education they can help in designing and adapting the curriculum to the level of ability of the pupils. Psychology would benefit by the additional information on mental development, evolution of mental processes, comparisons with other types of performances and possible insight into the mechanism and theory of perception. Many of the above-mentioned sciences have common grounds and research in one extends into the other. For the purpose of this study, however, the clinical and artistic aspects will be left in the background. Emphasis will be placed on the testing of intelligence and interracial comparisons of performance, in the hope that findings will be of some value to the educational system of the Eskimo population and perhaps eventually provide a tool for the assessment of their intelligence. More specifically, it is hoped that the analysis of the performance of Eskimos will determine whether the Draw-A-Man Test is applicable to Canadian Eskimos.

If it is, what modifications, if any, could increase the sensitivity of the test and lead to the establishment of norms for this northern population. The information which accompanies the children's drawings will also make it possible to draw conclusions on the effect of regional factors such as locality, type of schools, extent of contact with white people. Obviously, a single project cannot be expected to answer all these questions. Therefore, for the purpose of this thesis, the writer proposes to examine the following hypothesis; namely, that there is no difference in the rate of mental development of Eskimo children and the American population as measured by the Goodenough Draw-A-Man Test. In other words, if a growth curve based on their results were drawn, where would the identical ages for each group be located, how similar or how different would the interval between each age level be and what would be the difference in the slope of the entire two curves?

By glancing at the bibliography at the end of Goodenough's test manual, Measurement of Intelligence by Drawings,[2] one realizes that the bulk of the early studies on drawings were in the realm of art, whereas the more recent investigations are psychological and many, clinically

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2 Florence L. Goodenough, The Measurement of Intelligence by Drawings, New York, World Book Co., 1926, xi-177 p.

oriented. Research workers tried to unfold the mysteries of artistic creativity and discover preferences and styles in children's drawings. Most of these studies were by nature descriptive, fact-finding, based on observation.

As early as 1887, Corrado Ricci[3] made a systematic analysis of a man in a boat and a man on horseback done by children in primary schools. Ricci notes four developmental phases in the drawings from the designating of objects by arbitrary signs instead of words to the objective description without any artistic preoccupation. He commented on the possible importance of errors and omissions but failed to recognize a consistent trend.

The need for increased objectivity in the evaluation of drawings and the necessity for greater facility in coping with the mass of information on memory, visual forms and other aspects of art prompted psychologists and educators to devise objective scales. An article by Gain[4] entitled, The Objective Measurement of Accuracy in Drawings, illustrates the progress made in this field. Gain discusses three

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3 Corrado Ricci, L'Arte dei Bambini, Bologna, (no publisher), 1887, quoted by Pierre Naville, in "Elements d'une bibliographie critique relative au graphisme enfantin jusqu'en 1949", in Enfance, Vol. 3, No. 3-4, issue of May-October, 1950, p. 310-403.

4 T.D. Gain, "The Objective Measurement of Accuracy in Drawings", in American Journal of Psychology, Vol. 56, No. 1, issue of January 1943, p. 32-53.

groups of tests. Those planned definitely for measurement of drawing ability, employing rating scales of various degrees of standardization and tests designed for the measurement of drawings are the most elaborate. With the use of a drawing completion test, a protractor, a lantern projector and a transparent stencil to locate points, determine size and dilineate contours, Cain concludes that instruments should be used to evaluate the products of art because current devices are inadequate as indicators of errors in shape. Several tests and scales for the measurement of drawings have been constructed. But since this is a special aspect with which we are not too concerned at present, no further elaboration will be made. One need only refer to an article by Goodenough, Studies in the Psychology of Children's Drawings.[5]

The names of Lukens, O'Shea, Sully and Barnes are always included in the list of pioneers in the field of drawings and educational measurement. Lukens'[6] research led him to describe the evolution of drawing as follows: The child is somewhat intrigued by his product, the result of

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5 Florence Goodenough, "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 47, No. 5, issue of September 1950, p. 369-433.

6 H. Lukens, "A Study of Children's Drawings in the Early Years", in Pedagogical Seminary, Vol. 4, (no number), 1896, p. 79-110. Quoted by P. Naville, Op. Cit., p. 314.

his moving a pencil across the paper; secondly, he shows interest in the act of drawing; later, he becomes critical of his product. The fourth stage, that of superior artistic production is reached only by true artists with creative imagination. Lukens also gave special consideration to details, corrections and scribbling. Seventy-five per cent of the drawings contained human figures. Children were asked to draw an ornate table in an experiment by O'Shea.[7] At the five year old level, details were disregarded. Half of the eight year olds tried to copy everything and eighty-seven per cent of individuals sixteen years of age succeeded. No effort was made by children under ten to reproduce the correct position of the model. In his study of children under five, Sully[8] distinguishes scribbling as a form of play, the primitive drawing with the moonfaced man and a third phase slightly more realistic and sometimes symbolic. Drawing by the very young, Sully states, is a mere enumeration of what children know about objects. Barnes[9] requested

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7 M.V. O'Shea, "Some Aspects of Drawings", in Educational Review, Vol. 14, (no number), 1897, p. 263-284. Quoted by F.L. Goodenough, in "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 25, No. 5, issue of May 1928, p. 272-283.

8 James Sully, Children's Ways, New York, Appleton, 1907. Quoted by P. Naville, Op. Cit., p. 314.

9 Earl Barnes, "A Study of Children's Drawings", in Pedagogical Seminary, Vol. 2, (no number), 1893, p. 451-463. Quoted by F.L. Goodenough, in "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 25, No. 5, issue of May 1928, p. 272-283.

a group of children to draw a boy day-dreaming. He then noted the number of profiles, the amount of details, symbolism, sex differences and interest in emotional content of the picture. He noticed a transition from scribbling to profile but gave no definite explanation.

If a child is told to draw whatever he wants, what is he most likely to reproduce? The problem has been probed thoroughly because of its possible contribution to education, art and child psychology. Maitland[10] studied the drawings of children five to fifteen years old, attending public schools. Young children were more spontaneous and drew pictures of their immediate environment. The human figure was noted as the most popular choice, more so with children five to fifteen years of age. From then on a gradual decline in this interest was noted while geometric designs reached first place at the age of fourteen. The number of houses, plants and animals also decreased with advancing age. The conclusions arrived at by Maitland were also noted by Lukens and Gallager. Katzaroff[11] classified over two thousand

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10 L.M. Maitland, "What Children Draw to Please Themselves", in Inland Educator, Vol. 1, (no number), 1895, p.77-81. Quoted by A. Anastasi and J.P. Foley in "An Analysis of Spontaneous Drawings by Children in Different Cultures", in Journal of Applied Psychology, Vol. 20, No. 6, issue of December 1936, p. 689-726.

11 M.D. Katzaroff, "Qu'est-ce que les enfants dessinent?", in Archives de psychologie, Vol. 9, (no number), 1910, p. 125. Quoted by A. Anastasi and J.P. Foley, Op. Cit., p. 693.

drawings of boys and girls ranging in age from six to twelve years. The children drew miscellaneous objects, houses, animals, landscapes, human figures and plants in that order. In view of the fact that only ten per cent of the boys and seven per cent of the girls drew the human figure which seems to contradict many other investigations, Katzaroff concluded that the choice of spontaneous drawings of children could be greatly influenced by the environment. Gallager's[12] analysis of the drawings of fifty boys and fifty girls at each level from five to fifteen points to a diminishing spontaneity with the majority of the drawings being the type taught in schools.

A study of the drawings of five thousand six hundred Brazilian children by Rabello[13] is noteworthy because it corroborates the findings of German, English, French and Norwegian authors. It seems to confirm that the characteristics and evolution of drawing are unaltered by geographical, ethnical and environmental conditions. The material in this case also served to appraise the appearance of character and manual coordination. Human figure drawings and houses were

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12 M. Gallager, "Children's Spontaneous Drawings", in Northwestern Monthly, Vol. 8, (no number), 1897, p. 130-134. Quoted by A. Anastasi and J.P. Foley, Op. Cit., p. 695.

13 Sylvio Rabello, "Caracterieas do desenho infantil", in Boletim da directoria de educacao Pernambuco, Vol. 2, No. 1-2, (no date), p. 15-78, in Année Psychologique, Vol. 34, No. 2, 1933, p. 560.

the most popular but more could have been gained from this study had the statistical treatment of data been more precise. According to Ballard[14] who studied drawings in London schools, full-face views are more frequent before nine. Older children tend to draw profiles. Before nine, clothing often was symbolic; after nine, attention was given to details and prevalent styles. Boys displayed a marked preference for ships while forty per cent of the girls' drawings represented plants. McCarty[15] analyzed drawings of 31,239 children four to eight years old, attending kindergarten and primary school. These results did not differ significantly from those already mentioned. Human and animal forms still remained the main themes with the younger group; houses, trees, flowers, sun and simple scenes gained in popularity. The children generally drew the head in front view with eyes, nose and mouth and with arms and legs attached. Again the transition to profiles was apparent but no sex differences appeared. Hetzer[16] found that the three year old

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14 P.B. Ballard, "What Children Like to Draw", in Journal of Experimental Pedagogy, Vol. 2, (no number), 1913, p. 127-129. Quoted by A. Anastasi and J.P. Foley, Op. Cit., p. 696.

15 S.A. McCarty, Children's Drawings, Baltimore, Williams and Wilkins, 1924, 124 p.

16 Hildegarde Hetzer, Die symbolische Darstellung in der Frühen Kindheit. Wiener Arb. z. pädag. Psychol., Heft. 3, New York, 1926, Quoted by P. Neville, Op. Cit., p. 329.

does not usually predict what he draws; and the four year old changes the designation to fit the product; the five year old names his drawing in advance of producing it. In his analysis of 1,927 spontaneous drawings of boys and girls four and five years old, he reported that twenty-nine decimal three per cent of the boys and fifteen decimal six per cent of the girls drew descriptions of actual events, persons and things. Boys showed an awareness of technical aspects of things; girls were fond of legends, holidays, scenes with children. Knauber[17] examined the drawings of children two to eight years of age in schools where art training was not a part of the curriculum. Those attending kindergarten responded by drawing anything recent or interesting. Drawings of the older group reflected their immediate surroundings of animate and inanimate objects. The author attributed the marked individual differences in a choice of a topic to the environment.

It was customary for those wishing to study spontaneous drawings to ask the individuals to draw something. Bender and Hurlock adopted a different procedure by collecting

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17 A.M. Knauber, "A Study of the Art Ability Found in Very Young Children", in Child Development, Vol. 2, No. 1, issue of January 1931, p. 66-71.

data without the subject's awareness. Bender[18] studied the spontaneous chalk drawings of children on the side-walks and open pavements of the parks on the East side of New York. Numbering objects and drawing simple designs seemed to be the trend. Drawings of the human figures were numerous and usually incomplete. Studies such as this one can be helpful but caution must be exercised when interpreting anonymous products. In an attempt to discover the characteristics of the drawings of adolescents and for the sake of comparison with the performance of children, Hurlock[19] requested that teachers and psychology students collect from whatever sources possible, halls classrooms, note-books, waste paper baskets, the drawing of the students. The age range of this New York population was fifteen to twenty-three years. Twenty-three per cent of the 1,451 drawings consisted of printed words. Caricatures accounted for 22.8% of the drawings; human forms, 17.2%; conventional designs, 7.7%; sports, 5.5%; animals and houses, 3.5% each. Apart from the lack of proportion in children's drawings of the human figure, they tend to draw the whole person in front view,

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18 Lauretta Bender, "Gestalt Principles in the Sidewalk Drawings and Games of Children", in Journal of Genetic Psychology, Vol. 41, No. 1, issue of September 1932, p. 192-210.

19 Elizabeth B. Hurlock, "The Spontaneous Drawings of Adolescents", in Journal of Genetic Psychology, Vol. 63, No. 1, issue of September 1943, p. 141-156.

whereas adolescents prefer profiles and very seldom will they complete the picture. Their drawings also reflect their interests. Printed words and caricatures were found to be exclusively adolescent forms of expression.

Anastasi and Foley[20] gathered spontaneous drawings done by children of different cultures. Not much could be done with them statistically for the number was very limited. But forty-one countries were represented in these 602 drawings. The study stressed the importance of environment in the choice of a topic in the specificity and extent of details. Geographical and climatic differences, recreational occupations, religious themes, animal and vegetation were depicted and corresponding in each case to the degree to which that object was found or behaviourally emphasized in the particular culture. The majority of drawings included people.

While most of the earlier experiments were descriptive and fact finding in nature, investigators began to manipulate their data systematically, either by collecting the drawings of a single child through the years, thereby obtaining material for longitudinal studies or by gathering the drawings of different groups of children for cross-

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20 Anastasi and Foley, Op. Cit.

sectional examination. Cooke[21] is supposed to be the first in this latter group to have tried to determine definite periods of development in drawings in order to apply them to the field of art instruction. In the years 1903 - 1905, in Munich, Kerschensteiner[22] whose task it was to reorganize the course of study in drawing in local schools, collected one hundred thousand drawings under standardized conditions and treated them statistically. In the final analysis, three main phases of development were noted:

> 1. The schematic drawing in which the child draws according to his knowledge of the object;
>
> 2. An attempt at reproducing the usual appearance of the object without any sense of perspective; and,
>
> 3. Finally, the spatial factor or third dimension appears when the child is approximately twelve years old.

Schuyten[23] went a step further and tried to establish objective age norms using the human figure drawn by children as the subject. Although his plans failed somehow,

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21 E. Cooke, "Art Teaching and Child Nature", in London Journal of Education, (no volume, no number, no page), 1885. Quoted by F. Goodenough in Measurement of Intelligence by Drawings, New York, World Book Co., 1926, xi-177 p.

22 D.G. Kerschensteiner, Die Entwickelung der zeichnerischen Begabung, Munich, Gerber, 1905, 508 p. Quoted by F.L. Goodenough, in Measurement of Intelligence by Drawings, New York, World Book Co., 1926, p. 4.

23 M.C. Schuyten, original study in Dutch, Quoted by F.L. Goodenough, in "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 25, No. 5, issue of May 1928, p. 272-283.

his study paved the way for others who eventually were to overcome the major impediments to this goal. Taking into account previous experiments, Frederic Burk[24] made a detailed analysis of the act of drawings in its most primitive form. He also distinguished three important periods:

> 1. Predominance of muscular activity without visual control (2 - 3 years);
>
> 2. Crude attempt at reproducing an object with visible interest in the actual appearance of the object (4 - 10 years); and,
>
> 3. The subject strives for accuracy and objectivity in his product (over 10 years).

The transition was from muscular activity and imitation to visual interest. A parallel is sometimes established between scribbling and babbling, both of which are initially mere motor activity devoid of significance for the child but gradually become complex and refined modes of expression.

Quite a few authors have made a study of the drawings of a select group of children that extended over a period of months and sometimes years. Well known among these are the experiments of Eng and Luquet. Eng[25] preserved all the drawings made by her little niece up to the age of eight years. She then proceeded to examine the developmental

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24 Frederic Burk, "The Genetic Versus the Logical Order in Drawing", in Pedagogical Seminary, Vol. 9, (no number), 1902, p. 296-323. Quoted by P. Naville, Op. Cit., p.315.

25 Helga Eng, Psychology of Children's Drawings, New York, Harcourt and Brace, 1931, 223 p.

features in each successive year, the general components of a drawing such as proportion and she compared children's drawings with those made by primitive people. She points out that the developmental process is in agreement with the opinion of the Gestalt School and also that its progress is not regular but is punctuated with regressions.

Luquet[26] has devoted much of his time to the study of drawings. Apart from his numerous theoretical considerations, he has collected all the drawings of his little daughter until she was eight and a half years old, carefully noting the date, comments made by the child and the circumstances at the time. An attempt was made to keep her performance free from the influence of adults and other children. As usual it was observed that drawing, at the beginning, was merely a form of play and that later on as the child grew older it became a specific form of activity and finally a particular drawing.

Instead of adding to this list of references, the complete coverage of which would no doubt be interesting but would not be an aid nor a contribution to the present study, it would undoubtedly be more helpful to attempt a summary of the developmental stages described in the

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26 G.H. Luquet, Les dessins d'un enfant, Paris, (no publisher), 1913. Quoted by Pierre Naville, in "Eléments d'une bibliographie critique relative au graphisme enfantin jusqu'en 1949", in Enfance, Vol. 3, No. 3-4, issue of May-October, 1950, p. 320.

literature. Some authors have divided the development into what they considered to be the important four or five periods. Others have made a finer distinction by relating the children's progress for each successive year from age four to fifteen. But if we allow ourselves to be flexible and take into account the overlap, it is possible to fit the important stages and their main features in three broad divisions:

1. SCRIBBLING: two to five years.
    1. Muscular activity. Broken lines. No definite product.
    2. Interest in the act of drawing. Impulsive movement.
    3. Motor activity predominates. Parts are taken for the whole.
    4. Meaningless scribbling given a name by the child.
    5. Scribbling given a name after completion if it happens to resemble anything.
2. INTENTION TO DRAW: six to ten years.
    1. Representation of notions. Drawing the shape. Interpretation.
    2. Localization according to appearance. Repetition prevails.
    3. Attempts to give drawing some form. The lines represent an object.
3. REALISTIC REPRODUCTION: after age eleven.
    1. Realistic drawing of nature. Position. Proportion. Perspective.
    2. The child reproduces what he knows of the object. Order. Logic.
    3. Refinement of details and joints. Additional details become numerous.

Weil[27] has taken a different approach to summarize the developmental process in drawing. He grouped the outstanding features for each year as observed by various authors. The following paragraph illustrates what he obtained at age five:

> Début de la grande période du schématisme (de 5 à 8) (Charlotte Buhler) qui se complique du symbolisme; 50% des enfants à cet âge reproduisent par symboles (Charlotte Buhler). L'enfant nomme avant de dessiner (Hetzer). Il y a maîtrise du mouvement de la main (Eng). Tous les auteurs signalent le schématisme à cet âge: de 5 à 9 (Parlog et Neubaurer); mais, selon Graewe, le gribouillage d'origine motrice se poursuivrait jusqu'à cinq ans. L'enfant sait copier un carré (Binet) et un triangle (De Parrel).
>
> Dans le bonhomme apparait le tronc (Wintsch); son corps est complet (Rouma). Entre 5 et 6 se situe la représentation totale de l'homme comme corps articulé (Kanenberg).
>
> L'enfant néglige les ornements et détails (O'Shea); L'imagination créatrice apparait cependant (Grippen). A cinq ans on note les premiers essais perspectifs (Dix).[27a]

The wide interest in drawings and the accessibility of the material was bound to lead to the construction of tests measuring intelligence through drawings. One of the better known instruments of this kind is the Goodenough Draw-A-Man Test involved in the present study.

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27 Pierre-Gilles Weil, "Caractéristiques du développement du dessin par groupes d'âges, selon divers auteurs", in Enfance, Vol. 3, No. 3-4, issue of May-October, 1950, p. 221-226.

27a Ibid.

2. The Goodenough Test - Studies Describing Its Validity and Reliability.

Basically, the test is a standardized correction scheme whereby drawings of the human form are scored according to their precision and completeness. The basis of selection for the original items was an age-grade classification. The advantages of the test outweigh its limitations. An element of subjectivity occasionally affects the scorer's judgment and the reliability is greater when the test is administered at close intervals. However, very few tests can be found that are brief, non verbal, require so little material and training to administer, can be given individually or to groups of same or different racial backgrounds, has a high reliability and a reported correlation of .74 with the Stanford Binet.

Hinrichs[28] reported on seventeen cases widely scattered as to chronological and mental age who were retested at intervals varying from six months to two and one half years. The reliability coefficient was .65. Another heterogeneous group, delinquents this time gave a retest reliability of .79.

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28 W. Hinrichs, "The Goodenough Drawing Test in Relation to Delinquency and Problem Behaviour", in Archives of Psychology, Vol. 26, No. 175, issue of January 1935, p. 1-82.

In a study by M'Carthy,[29] the Goodenough Test was administered to 386 grade three and grade four students on two occasions a week apart. Each drawing was scored three times by trained examiners, twice by the same scorer and once by a different scorer. The author's intention was to investigate the reliability by checking the scorers' agreement among themselves when scoring the same drawing, also the scorers' agreement with each other when scoring identical drawings and, finally, the children's consistency of performance at one week's interval. In spite of composite scorer consistency of .94 and in spite of the fact that inconsistencies tend to cancel in the treatment of group data, discrepancies in the same examiner's rescoring of identical drawings amount to as much as a year or more of mental age in 12.4% of the cases. An intercorrelation of .90 was obtained where two examiners scored identical drawings. Because of the above findings and because of the fact that the correlation between a child's two drawings done a week apart was .68, M'Carthy indicates the need for caution in the use of the scale for individual diagnosis.

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29 Dorothea M'Carthy, "A Study of the Reliability of the Goodenough Drawing Test of Intelligence", in Journal of Psychology, Vol. 18, No. 2, issue of October 1944, p. 201-216.

Williams[30] has also studied the subjectivity of the scorer by having one hundred drawings scored by five upper division students in education who had no previous experience with the test. Intercorrelations of total scores obtained by the various scorers ranged from .80 to .96. Williams concluded that relatively inexperienced persons seem capable of obtaining reliable scores from the drawings. The study presented no data on rescoring by the same person. The author, however, states that the degree of agreement of different raters approximated that of repeated tests scored by the same person.

When Smith[31] gave the test twice on the same day to a large number of children, he found reliability scores of .84 to 96 for separate age groups. Yepsen[32] administered the test three times at four day intervals to a group of feeble-minded subjects nine to ten years of age. He obtained one correlation .89 and two .91 between the various administrations using the entire range of his group for all

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30 J.H. Williams, "Validity and Reliability of the Goodenough Intelligence Test", in School and Society, Vol. 41, No. 1063, issue of May 1935, p. 653-656.

31 F.O. Smith, "What the Goodenough Intelligence Test Measures", in Psychological Bulletin, Vol. 34, No. 9, issue of November 1937, p. 760-761.

32 L.N. Yepsen, "The Reliability of the Goodenough Drawing Test with Feeble-Minded Subjects", in Journal of Educational Psychology, Vol. 20, No. 6, issue of September 1929, p. 448-451.

correlations. It seems that some of the reliability coefficients are very high because of the extreme heterogeneity of the group and, in Yepsen's case, one must not forget that feeble-minded children have a tendency to stereotype in their responses. As previously mentioned, the reliability of the test decreases somewhat in a repeated performance by a child after a considerable lapse of time. M'Curdy[33] also arrived at this conclusion following an experiment with eighty-nine first grade boys and girls retested after a three month interval. In another study, at the kindergarten level, it was found that scores on the Goodenough Test increased after four months of schooling. A fruitful area of search for an explanation may be found in the differences between the kindergarten environment and the home environment.

3. Application of the Goodenough Test to Different Racial Groups.

The Goodenough Test has been used in numerous comparative studies of racial groups which included Alaskans, Americans, American Indians, Bengalese, Chinese, East Indians, Greeks and Negroes. In certain countries like China for instance it was not only revised but restandardized to

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33 Harold G. M'Curdy, "Group and Individual Variability on the Goodenough Draw-A-Man Test", in Journal of Educational Psychology, Vol. 38, No. 7, issue of November 1947, p. 428-436.

increase its suitability for that particular group. It must not be inferred that the original Draw-A-Man Test is obsolete. Regardless of cultural differences, children progress in a somewhat similar pattern in drawing but because of the cultural and environmental factors, some items inevitably lose their power of discrimination and should be substituted or at least eliminated. It can be anticipated that Eskimo children may tend to draw mitts and will therefore be penalized in the scoring of finger detail. On the other hand, the appearance of fringes, designs on costumes and the like may serve to evaluate their mental capacity, if the appearance of these signs is gradual. In numerous investigations reported in the literature it was found that the sensitivity of the test could be enhanced by a careful selection of items and the addition of new items.

Papavassiliou[34] gave the test to Greek children for the purpose of comparing the results with a Greek intelligence test, the Terman-Sakellariou. The sample was composed of 141 boys and 149 girls, age six to ten. The total correlation was .70; for boys .74, for girls .68. The author concluded that although the results approximated those of Goodenough, the test was a suitable ranking device and would

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34 I.T. Papavassiliou, "The Validity of the Goodenough Draw-A-Man Test in Greece", in Journal of Educational Psychology, Vol. 44, No. 4, issue of April 1953, p. 244-248.

have to be modified to achieve maximum effectiveness as an intelligence test. During the school year of 1942-1943, Havighurst[35] administered the Draw-A-Man Test to 325, six to eleven year old Indian children from six different tribes divided into nine groups. It was felt that Indians would not be handicapped by a drawing test. As it turned out, seven of the nine groups outclassed white children by a statistically significant margin. The average I.Q. for the nine groups ranged from 87 to 115. Attention was quickly focused on environmental factors in an effort to explain the discrepancy; for previous experiments with Indians had yielded similar results. The author explains that in the Indian culture, boys especially are encouraged to paint and draw and being very dependent on nature for their survival and development sharpens their sensitivity and compels them to observe accurately. Thus it could be expected that they would do well on a drawing test designed to tap a particular of intelligence; namely, concept development.

In a study designed to gain information on both drawing ability and intelligence of Mexican children,

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35 R.J. Havighurst, Minna Korol Gunther, and Inez Ellis Pratt, "Environment and the Draw-A-Man Test: The Performance of Indian Children", in Journal of Abnormal and Social Psychology, Vol. 41, No. 1, issue of January 1946, p. 50-63.

Manuel[36] tested 440 Mexican and 396 non-Mexican children in the San Antonio Public Schools, to be scored according to the Goodenough scheme and the Thorndike Drawing Ability Scale. The correlation between the two sets of scores ranged from .65 to .86, with Mexicans taking a substantial lead in drawing ability; but lagging behind in I.Q. by approximately ten points, 95 to 107 in favour of the non-Mexicans. The author states that the lower standing of Mexican children agrees with the findings of other investigators. As early as 1932, the Goodenough Test and a slightly modified version of the Stanford Binet were included in a study by the United States Government of the native races of Alaska; namely, Eskimos, Aleuts, and Indians.[37] The number of individuals tested and a brief description of the results are contained in Table I.

When undertaking research in the northern country, one must realize that a portion of the population will not be accessible and those who are available often cannot furnish the necessary information on their background. Furthermore, of the above group, only 328 were tested by both scales,

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36 H.T. Manuel and L.S. Hughes, "The Intelligence and Drawing Ability of Young Mexican Children", in Journal of Applied Psychology, Vol. 16, No. 4, issue of August 1932, p. 382-387.

37 Walter C. Eells, "Mental Ability of the Native Races of Alaska", in Journal of Applied Psychology, Vol. 17, No. 4, issue of August 1933, p. 417-438.

Table I.-

Results of Alaskan Races Tested with the Draw-A-Man Test and a Modified Stanford Binet

Race	N	Binet	N	Goodenough	Diff.
Eskimos	389	73.7	364	89.6	15.9
Aleuts	94	80.3	105	93.3	13.0
Indians	83	78.9	58	91.6	12.6

Walter C. Kelle, "Mental Ability of the Native Races of Alaska", in Journal of Applied Psychology, Vol. 17, No. 4, issue of August 1933, p. 432.

the difference of 15.6 points for Eskimos being practically the same as for the Eskimo group contained in Table I. The comparisons suggest that a language factor on the Stanford Binet may, to some extent, account for the discrepancy. Due to the size of the sample, no definite conclusions could be drawn with regards to purity of blood, sex differences or degree of contact with whites.

A number of studies were undertaken in Africa on both white and African children. One project reported in the journal Enfance[38] consisted of approximately 850 drawings by school children seven to fourteen years of age. One hundred and fifty of these became the object of an intensive examination. Apart from the characteristic manner in which the African children drew the hair, there were no notable differences in the developmental sequence. Intellectual quotients ranged from 66 to 100 and it was cautioned that they should be interpreted in the light of existing educational methods, amount of schooling and the indifferences of the homes. Children are sent to school between the ages of seven and nine without any knowledge of numbers, space, or time. The authors felt that the obtained mental age in this study was related more to school experience

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38 C. Bardet, F. Moreigne and J. Sénécal, "Application du test de Goodenough à des écoliers africains de 7 à 14 ans", in Enfance, No. 2, issue of March-April, 1960, p. 199-208.

than to actual chronological age and was therefore an index of school integration more than anything else. A second study[39] in Africa compared the performance of 203 Ethiopian and 174 French children between the ages of seven to twelve years to Goodenough's results. At the lower age limit, the results were identical for all three groups but for the ages eight, nine and ten, the French were three points ahead of the Ethiopian and lagging two points behind the American group. The investigator was rather shocked and overtly annoyed at these findings and goes on to say that intelligence tests of the Goodenough type are not intelligence tests at all but measures of drawing aptitude and besides, the Goodenough norms are ancient. Oddly enough, he concluded that closer statistical analysis revealed mostly sampling errors.

Somewhere along the way, the author candidly admits to being unfamiliar with Goodenough's standardization sample and it is obvious from the graph presented in the article that he is comparing his raw score means at each age level with Goodenough's smoothed and extrapolated curve, a comparison that is not too valid and which accentuates the differences between the two groups, especially at the upper end

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39 M. Aupècle, "Performances éthiopiennes au test de Goodenough", in Enfance, No. 2, issue of March-April 1955, p. 169-185

limit, because of a normal decrease in the rate of development as children grow older. In her initial sample, Goodenough only tested up to age ten. Therefore her curve beyond that age is theoretical and may or may not correspond to what actually happens when older children are tested. The author should have compared his raw score means with Goodenough's raw score means to age ten or else apply a linear regression formula for age and mean of raw scores as did Goodenough to obtain a smoothed curve similar to hers. The spread between the curves would have been lesser. At least the author of the study described above has included some statistical data in his article. In the majority of studies reviewed, the scanty statistical information precluded any form of appraisal.

Haward and Roland[40] conducted an experiment on a rather unusual group, thirty Nigerians with a mean age of 26, and eighty-three Europeans, mean age of 24. The mental age for the Europeans was 12.8 and for the Nigerians 8.8, the difference being significant at the one per cent level. The authors noted a tendency on the part of Nigerians in contact with whites to westernize their drawings and to show a wider range of talent, from bad to superior, while the

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40 L.R.C. Haward and W.A. Roland, "Some Inter-Cultural Differences on the Draw-A-Man Test: Goodenough Scores", in Man, Vol. 54, No. 127, issue of June 1954, p. 86-88.

Europeans were mostly mediocre. They also gave cultural explanations for the low Goodenough scores; namely, tribal outlook and the concreteness of the Nigerian's mental approach. One wonders why the authors bothered with the intelligence aspect of the drawings at all since they themselves state:

> Since scores are determined on the basis of an observational gradient which reaches its maxima at approximately thirteen years six months, the test offers no discrimination of intelligence in adults above dull normal intelligence using Wechsler's (1944) definition of the term.[41]

Further they mention that none of the Africans included were in the defective range. In other words, they announced their intention of using the test in an invalid manner. And when they say that the mean mental age of the African sample cannot be held to be a true indication of the actual age because the test scoring system has been standardized only on western cultures, they fail to emphasize that it was standardized on children and meant primarily for children. Considering the limited size, age range and representativeness of the sample, it would seem that the lengthy explanations given, either go beyond the scope of the experiment or do not match the title of the article.

In India, on the other hand, the test was considered acceptable for use in that country with room for improvement.

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41 Haward and Roland, Op. Cit., p. 86.

Vaidya[42] used the Draw-A-Man Test with a modified scale as one of the criteria for judging mental development of children in his project on bilingualism. In his final screening of items, he felt that only twenty suited the Indian milieu. Following this line of thought, Phatak[43] of Baroda attempted a revision of Goodenough's scale to increase its suitability and effectiveness. In the process new items were added, e.g., toes; others such as shoes were not discriminative and consequently eliminated. The scoring points for dressed and undressed body parts are listed separately. The new scale still in its experimental stage will have twenty-one points. Separately, Menzel[44] and Shrimali[45] calculated Indian norms using the Draw-A-Man Test in former Central Provinces and Mewar respectively. The first group was comprised of 2,600 cases ranging from 6 to 20 years; the second, 2,500 subjects between the ages of 3 to 25 years. In both

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42 M.P. Vaidya, Bilingualism in Education, unpublished thesis, (no date). Quoted by Pramila Phatak, "Draw-A-Man Test, A Survey of Investigations", in Indian Journal of Psychology, Vol. 31, No. 1-2, issue of January-June 1956, p. 31-40.

43 Phatak, Op. Cit.

44 E. Menzel, "The Goodenough Intelligence Test in India", in Journal of Applied Psychology, Vol. 19, No. 5, issue of October 1935, p. 615-624.

45 P.L. Shrimali, "Measurement of Intelligence in India", in The Punjab Educational Journal, (no volume), (no number), issue of April 1947, (no page). Quoted by P. Phatak, Op. Cit.

studies, the norms for Indian children, reproduced in Table II, were consistently lower than Goodenough's.

In Indonesia, where according to Thomas and Sjah,[46] there are no standardized intelligence scales, the Draw-A-Man Test was administered to 1,245 children attending grades one to six in public and private schools. The authors claim they correlated their results with Goodenough's original standardization group, a teacher rating and several school subjects. In reality, they have compared their results, not with Goodenough's original group,[47] but with a combined distribution of five groups that Goodenough utilized to check her norms.[48] Goodenough admits that the results of the combined distribution approximates her own but she questions the representativeness of this combined distribution and goes on to say:

> Upon the whole it has not seemed advisable to make any change in the original standards upon the basis of the data thus far obtained, although it is possible that later findings may lead to some adjustment along the lines indicated.[49]

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46 R.M. Thomas and Anwar Sjah, "The Draw-A-Man Test in Indonesia", in Journal of Educational Psychology, Vol. 52, No. 5, issue of October 1961, p. 232-235.

47 F.L. Goodenough, The Measurement of Intelligence by Drawings, New York, World Book Co., 1926, p. 38, Table 2.

48 Ibid., p. 44, Table 7.

49 Ibid., p. 47.

Table II.-

Norms Obtained by Menzel and Shrimali Testing Indian Populations with the Goodenough Draw-A-Man Test.

Age	Goodenough	Menzel	Shrimali
3.5	2		
4.5	6		
5.5	10		
6.5	14	9	10
7.5	18	11	12
8.5	22	13	14
9.5	26	15	16
10.5	30	17	18
11.5	34	19	20
12.5	38	21	22
13.5	42	23	23
14.5		25	25
15.5		27	27

Phatak, Op. Cit., p. 37.

Earlier, with reference to the derivation of age norms, she wrote, "Drawing from 3,593 children, ranging in age from four to ten years, were used in the final standardization of the scale".[50] This is the original group and designated as such on page thirty-eight of her manual.

When compared to the combined distribution, the Indonesian population was ahead at age five and six but lagged behind from age seven to twelve with the exception of age eleven where they were ahead again by a very narrow margin. Correlation with teacher rating was positive but low, from .07 to .32. Correlations with school subjects were from low to moderate with the exception of a high .80 for arithmetic. The authors felt that the results were sufficiently promising to warrant the use of the Goodenough Test until a more adequate test has been developed.

In a study undertaken in 1955, Dennis[51] administered the Draw-A-Man Test to 708 children, five to ten years old, from four groups of schools: University School, Beirut; Armenian Schools, Beirut; Port Said, Egypt; Sidon, Lebanon. At ages five and six, the mean I.Q. was approximately 100 but in most groups, except for University School, where

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50 Goodenough, Op. Cit., p. 35.

51 Wayne Dennis, "Performance of Near Eastern Children on the Draw-A-Man Test", in Child Development, Vol. 28, No. 4, issue of December 1957, p. 427-430.

education is most similar to that of western children, the means decreased with age. The authors attribute this to deficiencies in the child's experience relative to the representation of human figures and to the fact that in former times, for that particular part of the world, the representation of the human figure was taboo.

Drawings in general and the Goodenough Test in particular continue to hold the interest of people concerned with the problems of child development, whether they be related to the curriculum, personal adjustment or intellectual efficiency. References to the Draw-A-Man Test appear regularly in periodicals and it has come to our attention that a restandardization of the test will soon be on the market. At the end of 1963, the book in question was still undergoing some revision. The experimental design described in the following chapter will indicate the procedure that led to the accumulation of data for this project, through the help of the teachers of northern Canada, attached to the Department of Northern Affairs, Government of Canada.

CHAPTER II

EXPERIMENTAL DESIGN

1. Subjects.

In the present study, an attempt was made to reach not only a representative sample of Eskimo children but the entire school population between the ages of seven and thirteen inclusively. Approximately thirteen hundred information blanks with instructions were sent to the teachers. A total of 1,044 were returned. The mean reasons for incomplete returns include difficult weather conditions affecting both mail distribution and school attendance; unusual season changes, conflicting activities, such as hunting and education, and the nomadic nature of certain groups of Eskimos in search of better living and hunting grounds. Despite obstacles, the number of completed forms would appear to be considerable judging by a mimeographed report describing the school population of the Northwest Territories by regions and race, released by the Department of Northern Affairs.[1] According to the above mentioned report, the total number of registered Eskimo pupils at that time was 1,489. Of the

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1 Canadian Government, mimeographed report entitled, "Classification of Pupils - MacKenzie Education District and Arctic Education District as of March 31, 1960", released by the Department of Northern Affairs, June 1960, 4 p.

1,094 drawings returned, eighteen were rejected because essential information was lacking. The resulting distribution of pure blood Eskimos appears in Table III. Sometimes the information blank itself was not included. Six drawings of children over seventeen or under five years of age were discarded; and in keeping with the plan of the study, half whites and full whites were put aside temporarily.

The group contained 499 males and 495 females from thirty-one different locations across northern Canada. Since many studies indicated that the Goodenough Draw-A-Man Test lost effectiveness as a tool for the measurement of intellectual development of normal children beyond the age of thirteen, it was felt initially that the study should cover the years six to thirteen. However, with present data being suitable for verification of this statement on an Eskimo population, the range was extended to include children from five to seventeen years of age. Due to the different types of schools and probably also for reasons stated earlier in connection with incomplete returns, students are not graded like those of other provinces who usually attend school from September to June. However, attendance records are kept. Consequently, the possibility of grade level comparisons is eliminated and the emphasis is concentrated on age levels. One should keep in mind at this point that under normal circumstances a thirteen year old student has completed seven

Table III.-

Number of Drawings with Age and Racial Origin of Subjects Available.

Age	Pure Eskimo	Half White	Pure White
1	9		1
6	59	1	2
7	105	8	12
8	123	4	8
9	142	5	5
10	116	7	
11	100	3	5
12	109	3	
13	94	5	1
14	55	2	
15	53	2	1
16	20	1	
17	9		
Total	994	41	35 = 1070

or eight grades while the average thirteen year old Eskimo may only have the equivalent of our or five grades to his credit. Only through a detailed analysis of the information blank will the above statement be verified.

2. Procedure.

With the help of the Education Division, Department of Northern Affairs of the federal government, a letter, Appendix 1, was sent to the teachers attached to the department, enlisting their cooperation in the Goodenough project. It dealt with test administration procedure, advice on how to obtain the child's best effort without any coaching or intervention. A separate sheet, Appendix 2, provided the teachers with a summary of their duties and an Eskimo translation of test directions. Along with the letter, information blanks, Appendix 3, one for each child tested, had to be completed by the teachers in an attempt to gather pertinent data on the children. Age, sex, number, locality, handedness, hospitalization, teacher rating, age of initiation to school, number of years in school, racial origin, occupation of parents, physical disabilities and contact with whites were the main questions. The teachers then gathered all the material which was sent to the Department of Northern Affairs and collected by the writer. Mention must be made also of the ten localities chosen at random to

do a retest of their population, involving some two hundred and fifty subjects, two months after the first session.

The next step consisted in devising a code for the information blank that would permit all data concerning a child to be placed on a single line at the left of a large sheet of graph paper. Each item of the accompanying drawing, scored by the writer in accordance with Goodenough's manual, could then be inserted beside the information. Thus any segment of the population could be selected and examined quickly, combining any part of the information blank with any item from the scoring scheme. The information blank code, Appendix 4, is included in the Appendix section mainly for its importance in follow-up projects and work involving the information blank. It would be useful to know, for example, the outcome of the teacher rating although in very similar experiments, the tendency on the part of the raters was to lump everyone in the average range except for the cases that really stood out. Again, with regards to the information blank, it was not always possible to place the occupation of the parents in well defined categories, since many were involved in assorted unskilled jobs or seasonal work.

When the entire group was completed, the Eskimo retests were scored and marked on the master sheets. In keeping with the procedure already adopted, drawings beyond

the age range defined and those that could not be matched for one reason or another were discarded. For the purpose of obtaining a coefficient of interscorer reliability, a sample of 202, every fourth pure Eskimo drawing was scored by a psychologist from the Ontario Hospital in Kingston, Ontario. The two distributions for these samples appear in Table IV.

Table IV.-

Age Distributions of the Pure Eskimo Test-Retest Group and the Interscored Group.

Age	Retests	Interscored
5		3
6	8	13
7	17	22
8	26	23
9	22	28
10	18	21
11	22	19
12	27	26
13	17	19
14	14	7
15	12	17
16	1	3
17	4	1
Total	188	202

In addition to the statistical analysis of the results of the experiment, chapter three will contain a critical discussion of the findings with its possible avenues for related projects. An attempt will be made to mention all major issues involved in the eventual establishment of local norms.

CHAPTER III

PRESENTATION OF RESULTS

1. Statistical Findings.

Special attention will be given here to the outcome of the test-retest group, the coefficient of interscorer reliability, the statistical interpretation of the growth curves and resulting norms for the Eskimo population.

The Eskimo-Goodenough project consisted basically in a comparison of the performance of Canadian Eskimos on the Draw-A-Man Test with Goodenough's norms obtained from the New York City and New Jersey areas. The main concern was to determine the feasibility of the test for Eskimos, the differences between the two groups and the characteristics of the growth curve. Secondly, interest was focused, to some extent, on the validity of the Goodenough Test per se and its underlying assumptions.

Although the tested population spanned the years five to seventeen inclusively, it was felt that only ages five to ten were directly comparable to Goodenough's results in all respects for she did not actually test beyond this age range. In doing a t test on the groups five to ten, using pooled age means, the t value of 0.49 with 10 d.f. was not found to be significant. This was $p > .20$ level of significance for a two-tailed test. We therefore fail to reject the hypothesis that the two populations in question do not differ significantly.

For the purposes of this investigation there was no significant difference between our findings and Goodenough's for ages five to ten.

The next step consisted in doing an analysis of variance of the Eskimo group for ages eleven to seventeen in an effort to account for any within group variance and between group variance. Since analysis of variance is additive and no zero values may be used, the value one has been added to all scores. A complete breakdown of the raw scores can be found in Table V. It does not contain the results of whites and half whites. These have been set aside temporarily even though it is doubtful that much can be done with them statistically because they are so few and tend to cluster around ages seven and eight and do not cover the entire age range. Their inclusion would have been detrimental to the purity of the sample and would lead to nebulous and confusing interpretations. Despite their limited number, cases falling in age groups five, sixteen and seventeen were included mainly for inspection. It need not be emphasized that any findings in these areas should be voiced with caution pending further experiments. The number of cases extending beyond the age range of Table V were extremely sparse as the older Eskimo boys are often called upon to participate in hunting expeditions which they find more appealing and which take them away from school. Two drawings of pupils not quite five years old were submitted, but being of white parentage, they were automatically put aside.

Table V.-

Scores and Age Distribution of the Eskimo Standardization Group.

Ages	5	6	7	8	9	10	11	12	13	14	15	16	17
Scores													
0-2		1											
3-5		3				1							
6-8	1	1	2										
9-11	3	9	6	5	2			2					
12-14	2	9	20	9	3	3		2			1		
15-17	2	13	13	12	7	6	3		3			1	
18-20	1	10	13	17	12	3	4	3	1	2	1		1
21-23		5	14	11	15	5	5	4	2	5			
24-26		5	9	13	19	14	12	4	8	4	6	2	
27-29		3	12	15	24	19	14	19	14	3	6	1	
30-32			8	20	25	11	14	18	8	2	8		1
33-35			6	6	22	24	20	22	16	8	6	2	1
36-38			2	9	11	16	15	13	22	12	11	8	3
39-41				5	2	11	8	16	10	8	7	3	2
42-44				1		3	5	3	7	7	4	3	1
45-47								3	2	3	3		
48-									1	1			
Total	9	59	105	123	142	116	100	109	94	55	53	20	9
Mean	12.67	16.00	20.80	24.95	27.23	30.22	31.00	32.27	33.49	34.85	33.89	35.35	35.33
S.D.	3.6	6.2	7.5	8.0	6.6	7.6	6.6	6.8	6.8	7.5	7.0	6.9	6.6

The analysis of variance showed no significant differences within groups but significant differences between groups. An F value of 4.2 with 6 and 91 d.f. being significant at the one per cent level. By inspection of the graph in Figure 1, it seemed plausible that the difference would lie between the sub class containing ages eleven, twelve and thirteen and a second sub class comprised of ages fourteen, fifteen, sixteen and seventeen. Actual computations confirmed the assumption, as the between groups' analysis of the sub groups yielded an F of 22.2, with 1 and 91 d.f., $p. < .01$ in F table, which is highly significant.

So far, it has been mentioned that the results of both Eskimo and Goodenough groups within ages five to ten are similar. Graphically, one can see that the Eskimos maintain a slight but consistent lead. However, at the very crucial age ten, where Goodenough's sample ended, the two groups met. After age ten, the Eskimo scores continued to rise but the slope was not as steep and it would appear that the rate of increase expressed by our lines diminished as a function of age. From observation of Figure 1, it can be concluded that a plateau has been reached at age fourteen. The means for ages fourteen, fifteen, sixteen and seventeen, oscillate around the mean of their means, thirty-four decimal eighty-five. A further study may uphold or reject this finding. It would have been pertinent to know what

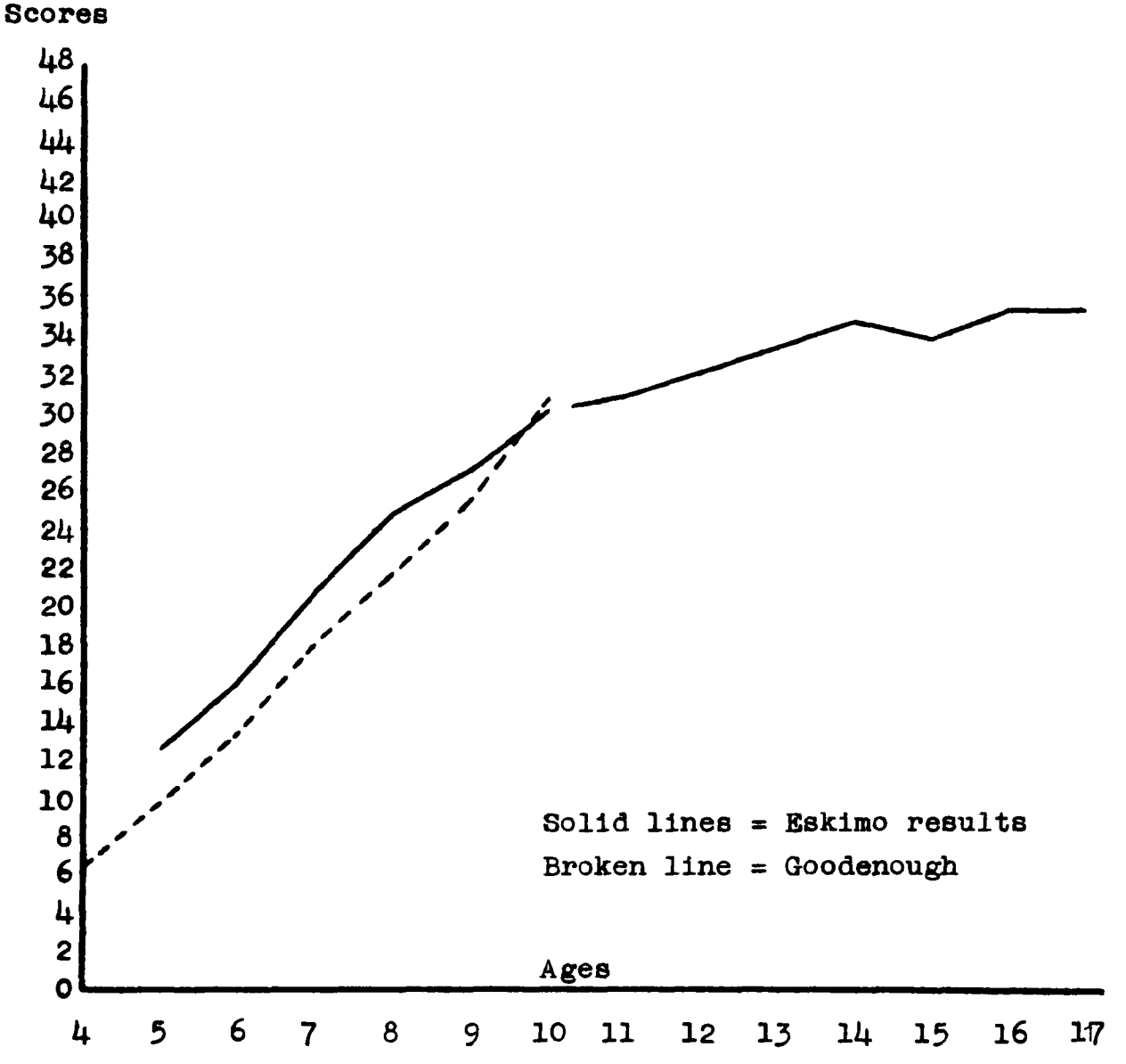

Figure 1. Means of Scores at Each Age Level for the Goodenough and Eskimo Populations.

direction the line would have taken had we had older students available say to age twenty-one. In this respect, it is unfortunate that the authors of studies in India, referred to on page thirty-one, did not include the complete findings on their samples which extended to ages twenty and twenty-five respectively.

Since Goodenough's final norms are based on her smoothed and extrapolated line, it was necessary in this project to follow the same procedure. The raw age means from five to ten have already been shown not to differ significantly, and since smoothing the lines brought them even closer together, it was predictable that no significant differences would be found between them. The relative position of the two lines is depicted in Figure 2.

Even though the extrapolated lines were graphically similar, it must not be taken for granted that they give an accurate picture of the performance of the experimental group. Certain statistical procedures and findings that are correct can still be misleading, as will be shown in the discussion immediately following the presentation of statistical data.

It was intended that schools selected for a retest sample would test their pupils one and a half months after the first testing session. However, mailing facilities being what they are and considering the vastness of the territory

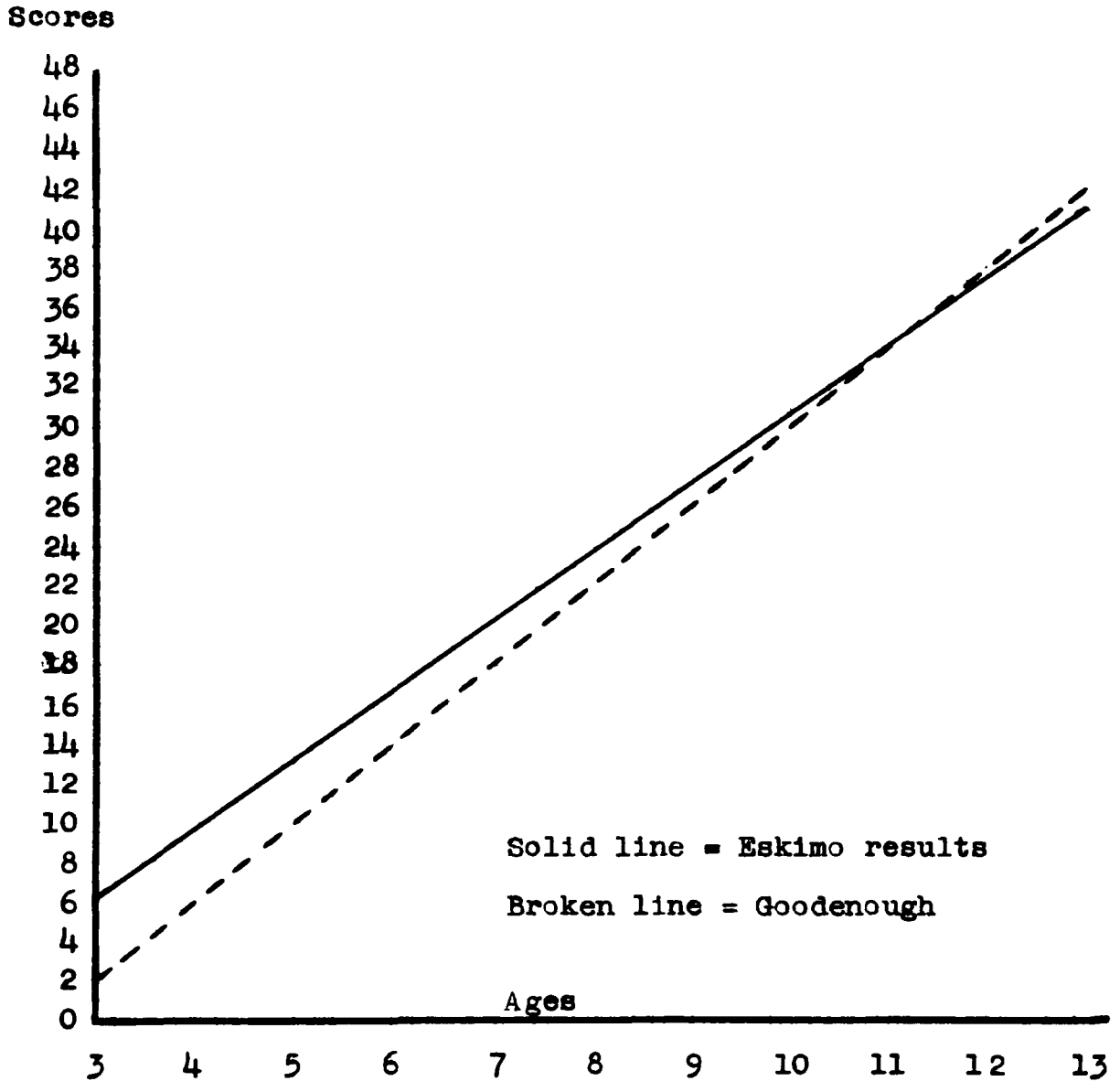

Figure 2. Smoothed and Estrapolated Lines Based on the Raw Score Means of the Eskimo and Goodenough Five to Ten Age Groups.

to be covered, the majority of the groups were retested on the proposed date but a few groups were retested earlier and others after a three month interval. The average interval was two months. The retest group yielded a correlation of .75 with a standard deviation of 8.7 for the first testing session and 8.8 for the second. Higher test-retest correlations have been stated in the literature, especially when the tests had been administered at closer intervals. Another factor which may have had some bearing here was the fact that the first test was done in the late spring and the repeat performance in the summer. In retrospect, it would have been preferable to do a test-retest operation within the same season for the population under study and for other countries where the changing seasons call for a change in quantity and type of clothing worn. A third element to be considered in the test-retest reliability coefficient is the unevenness of the maturation process itself.

When two hundred and two drawings were scored by two different persons familiar with the Goodenough Draw-A-Man Test, the correlation was .95. The mean of the scores for scorer A, the writer, was 29.1, and for scorer B, 28.2 with standard deviations of 8.8 and 9.1 respectively.

2. Discussion.

Returning now to Figures one and two, it can be seen that Goodenough's scores increase at a fairly regular rate to age ten. By her extrapolation she implied that the scores would likely continue to increase at the same rate to age thirteen. This was not true in the case of Eskimos. In fact, age ten proved to be the turning point in the rate of progress, with the last four age groups approximating a plateau. After age ten, there is a definite trend away from Goodenough although comparison of the two groups after age ten is not valid since it means comparing extrapolated scores with obtained scores. It was found that the two groups did not differ significantly from ages five to ten regardless of whether raw scores or smoothed scores were used but beyond age ten there was obvious graphical disagreement, even though direct statistical comparison was considered statistically unsound. It is a matter of conjecture as to what direction Goodenough's obtained scores would have taken had she actually tested beyond age ten.

A second question remains unanswered. What would follow the plateau we obtained? What would have happened after age seventeen? How far would the plateau be maintained? Would it be followed by an increase or a decrease? Only further experimentation will furnish the answer.

Another very important observation to be made at this point is the fact that the extrapolated lines of both groups did not differ significantly to age thirteen. As a matter of fact, they would not even differ significantly if we were to extend the lines to age fifteen. The raw scores, however, reveal that such an extension would be highly misleading and unrealistic in the case of Eskimos. What about Goodenough's extrapolation? Because she did not test beyond age ten the invalidity of her extrapolation cannot be demonstrated but the said extrapolation can certainly be viewed with caution and scepticism. The review of the literature was not enlightening in this area because of the tendency to omit raw scores and findings on children over twelve years of age. It is therefore impossible at the moment to give a definite answer to a two-sided question of paramount importance. Are the observed values that much in error? To what extent does extrapolation lead astray? From observation, the Eskimo results form a broken line. Forcing the data to fit an extrapolated straight line creates a false impression.

The term broken line is used here as a result of a trend analysis which revealed it to be such. It had been hoped that a curve passing through all age means of the Eskimo group would have proven to be a simple and practical method of establishing the final norms derived from the

present experiment. However, the simple trend analysis, polynomial orthogonal comparison, indicated definite linearity and a non-significant degree of curvature. The Eskimo age means seem to have produced three relatively straight lines; one from age five to ten, another from ten to fourteen and the third from fourteen to seventeen.

Lest someone be tempted to make far reaching conclusions on Eskimo education on the basis of the Draw-A-Man Test, the following comments should be kept in mind. In preparing her norms, Goodenough attributed much importance to age and school grade. With Eskimos, who are not graded, strictly speaking, the focus is on age groups. It is expected that the information blank will confirm the belief that the average ten year old Eskimo pupil has less schooling than the average ten year old American pupil from the New York City area. With school familities being superior, environment more stimulating and school experience greater for the Americans, and yet the results for both groups tested being almost identical, could it be that the Goodenough Test measures something unrelated to schooling, independent of teachers' influence? In the past, it has been common to consider the test from the aspect of measurement of mental development and at times as an indicator of artistic ability. Perhaps its ingredients are more complex, with functions not clearly defined and potentialities untapped.

The test may be recording the Eskimo's way of looking at things, unguided by teachers. It could very well be a perceptual interpretation of environment where elders and cultural characteristics exert a greater influence than the school. It would be extremely interesting if a research worker would test a group of Eskimo children not attending school and compare the results with those of educated children. The foregoing was not intended to belittle the test but to guard one against sweeping generalizations on the education, curriculum and mental ability of Eskimo children.

The cultural influence may be greater than previously believed. Nevertheless, to the extent that intelligence involves the assimilation of one's culture, the Draw-A-Man Test may be very useful. Secondly, the fact that a test is culturally loaded does not obliterate its value. It behooves those making use of the test, however, to adapt it to the specific culture in order not to handicap the children. If, after adjustments, the test correlates well with other ratings, why shouldn't it be used as a tool to assess and predict the performance of school children?

Many explanations can be given for the direction that the Eskimo line has taken, as depicted in Figure 1. One could state that the outcome of the Eskimo-Goodenough experiment agrees entirely with the unanimous opinion of people who have examined the drawings of children in relation

to intelligence, reported earlier in the review of the literature. They maintain that the Draw-A-Man Test was designed for children. It provides a gauge of their intelligence because of the close relationship between a child's intelligence and concept development noticeable in drawings. It is the general concensus of opinion that after age thirteen, the Draw-A-Man Test loses much of its discriminatory power and the relationship of mental development and drawings can no longer be isolated. It becomes contaminated by training and other emerging aptitudes in the individual. In this respect, it is significant that Goodenough did not deem it useful to extend her norms beyond age thirteen when nothing really prevented her from doing so.

It is a well known fact also that learning occurs at a faster rate during pre-adolescent years than it does later on. The Eskimo results agree with both these explanations; the one developmental, the other inherent in the structure of the test. Nevertheless, the picture is definitely incomplete and two additional explanations are offered, one structural again, the other environmental.

To a very young child, no environment is really barren. As a budding human being, he has so much to learn. His senses are avid, inquisitive; his energy appears boundless as he surveys a complex and fascinating world. Opportunities for growth are likely to be present for everyone

under ten in any environment despite inevitable differences. But after ten, these differences become prominent. While the five year old Eskimo and the five year old New Yorker may have been progressing steadily, the same may not hold true for the fifteen year old Eskimo from Frobisher Bay and the fifteen year old American from New York City. The latter is likely to be favoured not only by better school facilities but by a more stimulating milieu from every point of view. In brief, differences in environment would tend to have a greater bearing and influence on the children's development with advancing age. This could account for the fact that the two groups involved obtained similar results up to age ten, at which point the Eskimo rate of progress decreased considerably. If this line of thinking is valid, then the American children beyond age ten should outscore the Eskimos, in which case it might be discovered that Goodenough was partly justified in extrapolating.

It is quite possible also that the Eskimos were handicapped by items in the scoring scheme inaccessible to them because of cultural factors. Item analysis should be the next step in the standardization of the Goodenough Test for Eskimos. It should obviously be systematic and thorough. However, to illustrate the point under discussion, ten items with possible cultural bias were chosen empirically and the percentage of ten year old pupils from both groups succeeding each item was drawn in Table VI.

Table VI.-

Per Cent Succeeding Selected Items at Age Ten Level.

Item		% Goodenough	% Eskimo
6a	Neck present	83	43
6b	Outline of neck	65	36
9a	Clothing present	100	97
10b	Correct number of fingers	56	29
10c	Fingers in two dimensions	41	36
10d	Opposition of thumb	11	62
13	Heel present	66	26
15a	Ears present	36	27
15b	Ears correct	28	27
17b	Chin projected	31	4
		N = 213	N = 116

Because of the Eskimo's need to clothe the body from head to foot, a trait transferred to his drawing of the human figure, it was suspected that he would not be penalized by items requesting the presence of clothing. On the other hand, the overabundance of clothing would probably conceal many parts of the body such as neck and facial features. The tendency to draw mitts, while favouring the opposition of the thumb, would lose out on the correct number of fingers. The heel, in the past, was not part of Eskimo footwear.

Inspection of actual computations in Table VI did reveal marked differences in the majority of items selected, despite the fact that t tests of the means of both groups of ten year olds for items listed in Table VI and also for the entire test showed no significant differences. It can therefore be stated that their performance was equivalent but not congruent. It is possible to obtain the same score with a different combination of items. Secondly, similar results on one item does not mean it should be retained in the final Eskimo scoring scheme. Its value will have to be examined longitudinally, in relation to all other age groups. Thirdly, analogous results for a specific item, as was the case for 9a, clothing present, does not automatically eliminate the possibility of a strong cultural element. In India, for instance, the amount of clothing had very definite

cultural implications, so much so that separate scoring systems were devised for clothed and unclothed figures. The difficult task of item analysis will necessarily lead to intercultural comparisons and probably to the introduction of new items. Fringes, costume embellishments, figures engaged in some form of activity, these are examples of features potentially useful in a revised scoring scheme.

CONCLUSION

In conclusion, it has been demonstrated that the Goodenough Draw-A-Man Test is applicable to Canadian Eskimos, at least to age ten. The advisability of using the test on older Eskimo pupils is questionable at this stage. If someone wished to do so regardless, it would eappear that the raw scores given earlier in Table V would be closer to reality than the extrapolated norms in Figure 2.

Even prior to the scrutiny of the information blank, there is strong evidence that cultural and more specifically geographical factors were involved. The region inhabited by the Eskimos affects their drawing of a man although it has not been established yet whether, on the whole, the said geographical influence has had an adverse or favourable effect on their aggregate score. Apart from clarifying this point, an item analysis should shed light on the discrepancy that was found between the raw scores and the extrapolated scores at the upper age limit. Extrapolation of the raw scores of the five to ten age group, in an endeavour to follow Goodenough's procedure, was highly misleading. In Table VII containing the entire smoothed and extrapolated norms of both Americans and Eskimos for the purpose of comparison, one should remember that the tentative Eskimo norms having validity extend from age five to ten only. The

Table VII.-

Smoothed and Extrapolated Age Norms Based on the Raw Score Means of Both the Goodenough and Eskimo Populations.

Age	Goodenough	Eskimo
3.5	2	(6)[a]
4.5	6	(10)
5.5	10	13
6.5	14	17
7.5	18	20
8.5	22	24
9.5	26	27
10.5	30	31
11.5	34	(34)
12.5	38	(38)
13.5	42	(41)

a Numbers in brackets should be held in abeyance pending further research.

results for all other ages must be viewed with caution until further experimentation has explored the validity or unreliability of extrapolation in the case of Eskimos.

The Draw-A-Man Test is well on its way to becoming a diagnostic tool for the appraisal of the mental development of Eskimos. The groundwork has been laid. Ahead lies the task of refinement and perspective. Refinement will mean first of all, the screening, elimination and possibly addition of items. It will also consist in taking a closer look at pupils in the eleven to twenty year age range, through additional research. Thirdly, it will likely involve the re-administration of the Draw-A-Man Test with the revised scoring scheme for Eskimos. Finally, it may lead to an examination of present Eskimo results with the restandardized Goodenough Test, expected in 1963, but not yet available at the end of that year. The term perspective would embrace mainly cultural and theoretical considerations not necessarily confined to the Draw-A-Man Test. This area would include a thorough investigation of cultural implications and findings supplied by analysis of the information blank. Further examination of factors explaining the performance of racial groups on the Goodenough Test, other than its relation to concept development would also be desirable. Are the results related to amount of schooling? Would children in the same environment, not attending school, obtain identical

scores? Are we measuring the Eskimo's intricate perceptual interpretation of the environment? If so, one would want to know more about the contribution of each element in the environment; the parents, the school, the close family, the extent of contact with people from industrialized centres and other influences.

There is always the danger of getting lost in a maze of details while others are guilty of complacent over-simplification. Research workers who will continue to delve into the problems of Eskimos should be able to recognize the complexity of the field and its potentialities, and accept the challenge, a gesture that will no doubt be appreciated by the Eskimos themselves and by those who are personally concerned with their education and welfare.

ANNOTATED BIBLIOGRAPHY

Goodenough, Florence L., The Measurement of Intelligence by Drawings, New York, World Book Co., 1926, xi-177 p.

In addition to containing basic information on the Draw-A-Man Test, the manual, in its bibliography, mentions the early studies on children's drawings from 1890 to 1920.

--------, "Studies in the Psychology of Children's Drawings", in Psychological Bulletin, Vol. 25, No. 5, issue of May 1928, p. 272-283.

Coverage of studies on children's drawings is more extensive here than in her manual and they are analyzed rather than just listed.

--------, "Studies in the Psychology of Children's Drawings", in Psychology Bulletin, Vol. 47, No. 5, issue of September 1950, p. 369-433.

The above-named reference completes Goodenough's survey of children's drawings with the period extending from 1928 to 1950.

Naville, Pierre, "Eléments d'une bibliographie critique relative au graphisme enfantin jusqu'en 1949", in Enfance, Vol. 3, No. 3-4, issue of May-October, 1950, p. 310-403.

This article contains a ninety-page, non-critical summary of investigations of children's drawings. It is of particular significance because of its coverage of European contributions.

Weil, Pierre-Gilles, "Caractéristiques du développement du dessin par groupes d'âges, selon divers auteurs", in Enfance, Vol. 3, No. 3-4, issue of May-October, 1950, p. 221-226.

As the title of the article states, the present reference has accumulated the characteristics of children's drawings according to many authors and has grouped them chronologically with a set of features for each year observed.

APPENDIX 1

COPY OF LETTER SENT TO THE TEACHERS ADVISING ON HOW TO ADMINISTER AND SUPERVISE THE GOODENOUGH DRAW-A-MAN TEST

APPENDIX 1

COPY OF LETTER SENT TO THE TEACHERS ADVISING ON HOW TO ADMINISTER AND SUPERVISE THE GOODENOUGH DRAW-A-MAN TEST

Ottawa, April 3rd, 1959.

Dear Teacher:

The Goodenough "Draw-A-Man Test" Administration.

The present letter is to inform you that we are undertaking a new research project, and we would enlist your fullest co-operation in bringing this project to completion. Using the Florence Goodenough "Draw A Man Test", we hope to obtain information and statistical data which will enable us to appraise to some degree the mental development of Eskimo children and to establish suitable norms as a basis for subsequent comparisons.

Objective measurement provided by the Goodenough and similar tests can be very helpful in finding, for example, if the curriculum is adapted to the needs of these native pupils and to their level of ability. Adjustments to be made, if deemed necessary, will undoubtedly facilitate your task as a teacher.

When doing research with a test, it is very important not to depart from the standardized procedure of administration. Any deviation from the set of rules is liable to affect the performance and invalidate the results.

This project is by no means a subtle attempt to evaluate teachers or teaching methods. So do not coach or prompt. All those giving the test are requested to adhere to the following procedure:

1. Each child should be supplied with a pencil (HB standard) and a white sheet of paper 8½" x 11". Crayons and "primary pencils" should not be used.

2. Before beginning see that all books, pictures and wall posters are put away so that there will be no opportunity for copying.

3. The instructions to pupils on the attached sheet are then read -

   Directions are to be read in both English and Eskimo as indicated.

As the drawings are being made, the examiner should stroll about the room to see that instructions are being followed and encourage, by means of a little judicious praise, any one who seems to need it. In doing this it is best to avoid calling attention to the work of any individual child, rather, let the comments be of a general nature such as "these drawings are fine", "you boys and girls are doing very well", etc. ... Never make adverse comments and, under no circumstances should a child's attention be called to errors or omissions in his work however gross they may be. Answer all questions by saying "do it whatever way you think is best".

The importance of avoiding every kind of suggestion cannot be overemphasized. Not only must the examiner himself refrain from all remarks which could influence the nature of the drawings but he must see to it that no suggestions come from the children. They should not be permitted to hold up their drawings for admiration or comment in such a way that other children see them, nor to make any audible remarks about their work. The examiner should not however lose sight of this fact: IT IS ESSENTIAL FOR THE VALIDITY OF THE TEST THAT EACH CHILD MAKE THE BEST EFFORT OF WHICH HE IS CAPABLE. To secure such effort, a cheerful, sympathetic attitude must be adopted throughout.

There is no time limit for the test but little children rarely take more than five or ten minutes. If one or two children are slower than the rest, it is best to collect the papers from those who have finished and allow them to go on with their regular work while the slower workers are finishing.

The following special circumstances should be noted:

1. It sometimes happens that through erasure or other accident a child may spoil his drawing. In such cases he should be given a fresh sheet and allowed to try again.

2. In grades above the second (rarely below) it will occasionally be found that a child has drawn a bust picture only. When it is evident that this has been the intention, a fresh paper should be given and the child told to "make the whole man".

Now if these drawings are to be meaningful, some pertinent facts about the children will be needed. That is why an information blank for each child taking the test has been included. We realize the amount of work this means to you. We wish to express our gratitude beforehand and hope you will derive some satisfaction in sharing in a project aimed at the welfare of those for whom you now devote yourselves.

We are hoping to complete this project at the earliest possible date and would appreciate your giving this matter very special priority.

Yours truly,

(signed) J.V. Jacobson,
Chief.

APPENDIX 2

SUMMARY OF DIRECTIONS FOR TEACHERS

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SUMMARY OF DIRECTIONS FOR TEACHERS

1. Each child should be supplied with a pencil (HB standard) and a white sheet of paper 8½" x 11". Crayons and "primary pencils" should not be used.
2. Before beginning see that all books, pictures and wall posters are put away so that there will be no opportunity for copying.
3. Instruct pupils to write clearly their names and disc numbers on the top right-hand corner of the drawing paper.
4. Read the following instructions to pupils in English and Eskimo. (Teachers who cannot speak Eskimo should enlist the help of some one who can.):

> "On these papers I want you to make a picture of a man. Make the very best picture that you can. Take your time and work very carefully. Try very hard and see what good pictures you can make."
>
> Uvani paipauyni inungualiokovagit angotinguamik. Piunekpakgasuakluge. Sukaitlutit pitsiaklutit. Ayuinaklutit piuyunik inungualiogunangmangakpit.[1]

5. There is no time limit to the best. Re-read letter for special instruction governing special circumstances.

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1 In the original, these directions were also typed in Eskimo syllabics.

6. Complete one copy of the INFORMATION BLANK for each pupil and attach the completed copy to the drawing the child has made.
7. All copies of completed drawings with attached Information Blanks, together with this Summary of Directions Sheet are to be returned to the Education Division at the earliest possible date.

APPENDIX 3

THE INFORMATION BLANK

APPENDIX B

THE INFORMATION BLANK

DATE OF TEST_____ LOCALITY_____

PART -A-

Name_____

Age___yrs.___mos.__

Sex_____

Disc No._____

Handedness:
right_____
left_____

Teacher's estimate of intelligence (check)

very superior_____

superior_____

average_____

inferior_____

very inferior_____

Has child been outside to hospital or sanitorium?

_____

Age on leaving settlement for hospitalization

_____

Length of stay in hospital outside

_____

Place and date of birth_____

At what age did child start school? _____ yr._____ mo.

Number of years and months in school _____yr._____ mo.

Contact with whites, as at present (check) a) full contact____

b) periodic_____.

(Full contact means living among whites; periodic contact means one contact a month or less.)

Occupation: father_____ mother_____

Racial origin: father _____ mother_____

APPENDIX 3

PART -B-

Answer only items that apply to this child by writing "yes" and when necessary, a brief explanation.

Physical disabilities	School attendance conditions
Sight_____	Part-time mission_____
Hearing_____	Seasonal_____
Neuro-muscular_____	Federal Day_____
Lengthy illness_____	Residential_____
Others_____	

Any irregularities or further comment_____

_____

N.B. Disc number should appear on both the information blank and the child's drawing (top right corner on drawing).

APPENDIX 4

THE CODE ADOPTED FOR THE INFORMATION BLANK

APPENDIX 4

THE CODE ADOPTED FOR THE INFORMATION BLANK

No Number - 1 to 1,100 (r) for retests

A Age - 5,6,7,8,9,10,11,12,13,14,15,16,17 (years)

S Sex - 1 M. 2 F. W=white parents ½W=half white

T Time spent in school - 1,2,3,4,5,6,7,8,9,10,11,12 (years)

C Contact with whites - 1 Full, 2 Periodic

TR Teacher rating - 1 VS, 2 S, 3 A, 4 I, 5 VI.

H Hospitalization - 1,2,3,4,5,6 (years' duration)

Sc Type of school attended - 1 PT, 2 Seas, 3 FD, 4 Res.

I Initiation to school - 5,6,7,8,9,10,11,12,13 (years old)

L Locality - (see list below)

HA Handedness - 1 right, 2 left

O Occupation (father) - 1 hunter, 2 fisherman, 3 janitor, 4 labourer, 5 deacon, 6 carpenter, 7 R.C.M.P., 8 carver

Localities:

1	Aklavik	9	Chesterfield Inlet
2	Cambridge Bay	10	Coral Harbour
3	Coppermine	11	Eskimo Point
4	Reindeer Station	12	Fort Chimo
5	Tuktoyaktuk	13	Frobisher Bay
6	Arctic Bay	14	Great Whale River
7	Baker Lake	15	Gjoa-Haven
8	Cape Dorset	16	Koartak

APPENDIX 4

17 K R P Federal D

18 Rankin Inlet

19 Holman Island

20 Lake Harbour

21 Eskimo Gospel Crusade

22 Pangnirtung

23 Povungnetuk

24 Repulse Bay

25 Resolute Bay

26 Spence Bay

27 Pelley Bay

28 Fort Harrison

29 Sugluk

30 Ivuyivik

31 Nain

APPENDIX 5

ABSTRACT OF

The Administration of the Goodenough Draw-A-Man Test
to Canadian Eskimos

APPENDIX 5

ABSTRACT OF

The Administration of the Goodenough Draw-A-Man Test to Canadian Eskimos.[1]

The Eskimo children who, like everyone else, are in need of a sound education often find themselves isolated from the rest of Canada by a vast territory, severe winters and limited channels of communication which deprive them, in many cases, of modern school facilities and tools to evaluate and predict their performance in school.

With the foregoing in mind, it was proposed that an intelligence test, the Goodenough Draw-A-Man Test be standardized on the entire pure Eskimo school population numbering, at the time, 1,489. The final group was comprised of 499 boys and 495 girls from thirty-one localities and ranging in age from five to seventeen years.

Only ages five to ten were directly comparable to Goodenough's results since she did not actually test beyond that age. She merely extrapolated. A t test of these age groups failed to reveal any significant differences in the two populations. Graphically, the slope representing the Eskimos' rate of progress, proceeded regularly to age ten, decreased to

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1 Florian Ouellette, Master's thesis presented to the School of Psychology and Education of the University of Ottawa, Ottawa, 1964, viii-78 p.

age fourteen where a plateau was reached and maintained to age seventeen.

An analysis of variance of ages eleven to seventeen indicated no significant within group differences but significant between group differences occurring between a first sub class containing ages eleven, twelve and thirteen and a second sub class comprised of ages fourteen, fifteen, sixteen and seventeen. A trend analysis revealed definite linearity and an insignificant deviation from linearity.

Following Goodenough's procedure of smoothing and extrapolating the means of the scores for children five to ten, no significant differences were found between the two populations. In fact, extrapolating to age fifteen would have yielded similar results despite the unrealistic and misleading nature of such an extension in the case of Eskimos, considering the raw scores. In view of the above, Goodenough's extrapolation must be viewed with caution and scepticism. Likewise, the Eskimo extrapolated scores, pending further research.

In attempting to explain the direction of the slope obtained by Eskimos, four main reasons were suggested. In accordance with the theory of the test, results reinforced the accepted opinion that the Draw-A-Man Test loses much of its power of discrimination after age thirteen, at which time it becomes impossible to isolate its main ingredient, concept development in drawings. A second statement, basically

developmental, claims that learning occurs at a faster rate during pre-adolescence than it does later on. A third explanation, environmental, proposed that differences in opportunities for growth would be more significant with advancing years. For instance, while a five year old Eskimo and a five year old New Yorker may have been progressing steadily, the same may not hold true for a fifteen year old Eskimo from Frobisher Bay and a fifteen year old American from New York City. Lastly, a fourth explanation, partly environmental partly theoretical, indicated that some of the scoring items may not be accessible to Eskimo children due to cultural and geographical considerations. A selection of ten items with possible cultural bias confirmed the above statement and also revealed that equivalent performances were not necessarily congruent.

While the test appears satisfactory for Eskimo children, age five to ten, additional research should clarify the issue of extrapolation versus obtained scores, shed more light on cultural and theoretical elements with the help of the information blank, and finally, concentrate on increasing the sensitivity of the Draw-A-Man Test for Eskimos through item analysis and a possible restandardization.