THE CORRELATION BETWEEN THE ELEVEN SUBTESTS OF THE WECHSLER ADULT INTELLIGENCE SCALE AND SUPERVISOR EVALUATIONS OF INSTITUTIONALIZED MENTALLY SUBNORMAL ADULTS

BY

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The Supervisors of the working inmates at the Montana State Training School, Boulder, Montana

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ABSTRACT

The purpose of this investigation was to determine if a relationship exists between supervisor evaluations of occupational readiness of the institutionalized mentally subnormal adult, and the raw scores obtained by the mentally subnormal individuals on the subtests of the Wechsler Adult Intelligence Scale. The secondary purpose of this study was to determine whether or not the evaluations by these supervisors was reliable.

The subjects were twenty-five mentally subnormals residing at the Montana State Training School, Boulder, Montana. The I.Q.'s of the subjects ranged from 52 to 83, and all were being considered for job placement outside of the institution at the time of this study.

Each subject was rated by three supervisors on ten items which comprise occupational readiness. The responses of the evaluators were correlated and found to be reliable. The supervisor evaluations were then correlated with the raw scores obtained by the subjects on the eleven subtests of the Wechsler Adult Intelligence Scale, and the hypothesis of no relationship at the .10 level of significance was not rejected.

It was concluded on the basis of this study that the Wechsler Adult Intelligence Scale, without further and more intensive investigation probably has little value as a device for predicting the occupational readiness of the mentally subnormal institutionalized adult.

It was recommended that a similar experiment be conducted using a much larger sample and a greater variety of correlational techniques. Also a similar experiment using a different measure of intelligence i.e. The Stanford-Binet Intelligence Scale was recommended.

CHAPTER I

INTRODUCTION

Mental subnormality is a serious problem affecting many aspects of our society. The problems presented by these people to themselves, to their families, and to their communities--include biological, psychological, educational, vocational, and social areas of concern.

Since 1950, interest in the problem of mental subnormality has grown very rapidly. During the past decade increased activities have been stimulated by a few foundations, by the demands of parents, by interested lay and professional groups, and by members of legislative bodies who have been convinced of the urgent need for programs in this field.

The United States Department of Health, Education and Welfare has reported that mental subnormality affects approximately 3% of any given population. Based on 1962 population estimates about 5.4 million persons in the United States would be affected. Information on mental subnormality is incomplete, and no adequate means of gathering full statistics have yet been devised. Using Intelligence Quotient (I.Q.) as one measure, experience shows that most people with I.Q.'s below 70 have significant difficulties adjusting adequately to their environment.[1]

The mildly mentally subnormal persons (I.Q. usually 50 to 70, but sometimes including those of slightly higher I.Q.) comprise the largest group of the mentally subnormal population. (Approximately 83%) President Kennedy's Panel on Mental Retardation reports that many of these

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[1]U.S. Department of Health, Education, and Welfare, Mental Retardation: A National Plan for a National Problem, p. 6.

individuals "given timely supervision, guidance, and training early enough in life, will be capable of complete assimilation into our society."[2]

At present, of the 213,000 individuals in institutions for the mentally subnormal, nearly 40% are classifiable as mildly mentally subnormal, or individuals who could be profitably assimilated into our society as independent, productive workers.[3]

There is a lack of sophistication in predictive devices which can be used to increase the comprehensiveness of job readiness determination and evaluation. This deficiency hinders the expedient placement of mentally subnormal individuals from the institutions into jobs, at which they can succeed outside of the institution.

The Problem

The problem of this study was to determine:

1. Does a relationship exist between supervisor evaluations of occupational readiness, and the eleven subtests of the Wechsler Adult Intelligence Scales (WAIS) test of intelligence?

2. Are the supervisor evaluations of mentally subnormal institutionalized adults reliable?

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[2]The President's Panel on Mental Retardation, A Proposed Program for National Action to Combat Mental Retardation, pp. 5-6.

[3]Ibid., p. 131.

Hypotheses

The null hypotheses were:

1. No relationship exists at the .1 level of significance between supervisor evaluations and the raw scores of the WAIS subtests of the institutionalized mentally subnormal adults.

2. The supervisor evaluations of the institutionalized mentally subnormal adults are not reliable.

The Procedure

In this study, 25 mildly mentally subnormal adults, inmates of the Montana State Training School, Boulder, Montana, were used as subjects.

The experimenter was given permission by Mr. James Sanddal, Superintendent, to peruse the records of the subjects to obtain data pertinent to this study. The data taken from the records included: raw scores and I.Q. scores of the Wechsler Adult Intelligence Scales for each subject; length of time in the Montana State Training School; length of time on-the-job within the institution; sex; and supervisor evaluations.

The supervisor's evaluation form used by the Montana State Training School was utilized by this experimenter as it was felt to be evaluative of all the aspects of occupational readiness intended to be investigated in this study.

The supervisor's evaluation form was given, for each subject, to two supervisors who had not previously been requested to fill out such a form. Counting these two evaluations and the evaluations previously submitted to the office, three evaluations of each subject were obtained.

The evaluations by the supervisors were statistically checked for inter-rater reliability and were found to be significantly reliable. The numerical evaluations of each subject were totaled and the means were correlated with their raw scores on the eleven subtests of the WAIS.

The mean scores for the subjects, on each of the ten items of the evaluation, were separately correlated with the mean scores for each of the eleven WAIS subtests.

Definitions

1. Mental subnormality is a general term embracing all classes of persons whose general mental development is incomplete or insufficient, relative to their chronological age. The degrees of subnormality are indicated as "mild," "moderate," and "severe."[4]

2. Job readiness means that an individual has the physical, psychological, occupational, and placement characteristics that make him a desirable prospective employee, and that he is ready to assume the role of a worker.[5]

3. Occupational readiness is a portion of the criteria for determining job readiness. It includes the aspects of a person's personality directly related to his job, i.e. skills, knowledge, work habits, attitudes, aptitudes and experience.[6]

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[4]World Health Organization, The Mentally Subnormal Child, Series No. 75, 1954.

[5]Sinick, Daniel, Placement Training Handbook, p. 20.

[6]Ibid., p. 23.

Limitations

The limitations of this study were:

1. A small sample of the population was used.
2. The supervisor evaluation form was not standardized.
3. The same three supervisors did not evaluate all of the subjects.

CHAPTER II

REVIEW OF LITERATURE

Today there are over 200,000 mentally subnormal persons confined to institutions. Their care costs relatives and communities some 300 million dollars annually. Additional amounts are required for the construction of facilities for custodial and educational purposes. The cost of institutional care, facilities, construction, and special care in the family home totals more than one billion dollars per year.[1]

If the mildly mentally subnormal individuals could be removed from the institutional setting by being placed on jobs outside of the institution, three purposes would be served:

1. There would be more room available for individuals who could more profitably benefit from custodial care.

2. The costs to relative and communities for institutional care would be reduced.

3. The true goal of education and rehabilitation in the United States would be realized, that is to help every individual to make the most of his potential for participation in all the affairs of our society, including work, no matter how great or small his potential may be.[2]

Vitally interested in the removal of the mildly mentally subnormal from the institutional setting into a productive employment situation within the community, is the Division of Vocational Rehabilitation.

The Division of Vocational Rehabilitation is in philosophical agreement with residential care institutions in the belief that: "No

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[1]U.S. Department of Health, Education, and Welfare, Mental Retardation, pp. 7-8.

[2]The President's Panel on Mental Retardation, op.cit. pp. 100-138.

child or adult should remain in residential care any longer than necessary. Regular and frequent re-evaluations must be scheduled to reveal any possibilities that may have been developed in his community and to determine whether the individual himself has reached the point where he may profit by some other form of care[3] or activity."[4]

The "other form of activity" of primary concern to Vocational Rehabilitation is placement of the individual on a job.

Before effective job placement can be initiated, it is the responsibility of the institution's job placement director and the vocational rehabilitation counselor to evaluate the mentally subnormal individual's job readiness.[5]

To facilitate job readiness evaluation, Sinick has compiled the following criteria:[6]

1. Physical readiness.
2. Psychological readiness.
3. Occupational readiness.
4. Placement readiness.

At present, the methods used by professional personnel for determining job readiness are:

1. Analysis of work history

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[3] Ibid., p. 137

[4] Author insert.

[5] U.S. Department of Health, Education and Welfare, An Introduction to the Vocational Rehabilitation Process, p. 122.

[6] Sinick, op. cit., pp. 22-24.

[7] Ibid., pp. 24-25.

2. Analysis of educational and social data
3. Interviews with client and family
4. Medical and psychiatric consultation
5. Psychological testing
6. Supervisor evaluation
7. Work samples
8. Part-time or temporary work experience
9. On-the-job training experience
10. Role play of job interview
11. Case conference

In most instances there are not enough professional personnel to adequately consider all the criteria or to use all the acceptable methods for determining job readiness. Therefore, many institutionalized mentally subnormal individuals are not being placed on jobs outside the institution often without the benefit of comprehensive, professional job readiness determination. Job placements on the basis of trial and error and inadequate evaluation have resulted in a high degree of failure. These failures are costly in both time and money, not to mention the cost to the mentally subnormal individual in personal adjustment.

Indicative of the degree of failure of mentally subnormal individuals placed on jobs outside of the institution, are the results of a study conducted by Sheldon J. Brown, Supervising Psychiatric Social Worker at Pacific State Hospital, Los Angeles, California. In this study, forty-eight mentally subnormal individuals were placed on vocational

leave[8] from July 1952 to July 1953. Their average age was 25 years, and their average I.Q. was 60. Within one year over half of the subjects (27) were returned to the hospital for reinstitutionalization. Of the 27 individuals returned, 56% were returned because of inadequate interpersonal relations and work performance. It was stated that, if a more comprehensive job readiness evaluation had been made, there might not have been such a high rate offailure among the individuals placed.[9]

In the monograph, "Prognosis of Mental Subnormals," Windle states:

> While this population (mentally subnormal) has often been viewed as forming a stagnant pool within institutions, concentration upon admissions rather than residents reveals an appreciable flow back out of the institution. This flow occurs in spite of heavy concentration of staff time and orientation toward custody rather than rehabilitation. If the rehabilitative orientation pervades more of the institutional program the identification of prognostic indices for use in placement and in guiding rehabilitative efforts will become increasingly important.[10]

After surveying the attitudes of 177 employers regarding employment of the mildly mentally subnormal, Cohen makes the recommendation that:

> Persons responsible for training programs should consider and plan for the ultimate goal of placement for the mentally retarded. They should be aware of the reported causes of vocational failures of mentally retarded individuals and should design programs to emphasize desirable behavior patterns. Standards of performance in vocational and social situations should be established to compensate for the relatively negative attitude many employers have about the retarded.

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[8]Job Placement is often referred to as vocational leave, by custodial institutions.

[9]Windle, Charles, Prognosis of Mental Subnormals, pp. 20-24.

[10]Ibid., p. 25.

> Persons responsible for placement programs must be acutely aware of the importance of an initial successful placement and thereby increase the probability of an employer hiring subsequent retardates.[11]

In the past, general areas of predictive characteristics have been used to identify prognostic indices to be used in various ways in dealing with the mentally subnormal individual. However, the characteristics used in this study can be generally classified as "individual abilities and disabilities," measured in terms of intelligence and general working ability.

In this study, the influence of family and community factors are not specifically considered except in a generic sense. Demographic characteristics, i.e. age, sex and race, along with institutional experience, i.e. length of institutionalization and type of work experience, are mentioned, but not used in the statistical measurement per se.

Intelligence and General Work Ability

Intelligence, operationally defined by Wechsler, is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.[12]

With this in mind we will consider the Wechsler Adult Intelligence Scales. This is an intelligence test which consists of six Verbal and five non-verbal or Performance subtests as follows:

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[11]Cohen, Julius S., "Employer Attitudes Toward Hiring Mentally Retarded Individuals," American Journal of Mental Deficiency, 67:705:

[12]Wechsler, David, The Measurement and Appraisal of Adult Intelligence, p. 7.

1. An information test
2. A general comprehension test
3. A memory span test (digits forward and backward)
4. An arithmetical reasoning test
5. A similarities test
6. A vocabulary test
7. A picture completion test
8. A picture arrangement test
9. A block design test
10. An object assembly test
11. A digit symbol test.

The grouping of the subtests into Verbal (1-6) and Performance (7-11) while intending to emphasize a dichotomy as regards possible types of ability called for by the individual tests, does not imply that these are the only abilities involved in the tests. Nor does it presume that there are different kinds of intelligence, e.g., verbal, manipulative, etc. It merely implies that these are different ways in which intelligence may manifest itself. The subtests are different measures of intellitence, not measures of different kinds of intelligence, and the dichotomy into Verbal and Performance areas is only one way of several ways in which the tests could be groups.[13]

The Information Test.

Questions in this subtest are formulated to discover the subject's range of information. This test often indicates the alertness of the

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[13] Ibid., pp. 63-64.

person towards the world around him, and gives his general range of information.[14]

The Comprehension Test.

The questions included in this test are of a sort that the average adult may have had occasion to answer for himself at some time or heard discussed in one form or another. They are for the most part stereotypes with a broad common base.[15]

The Arithmetical Reasoning Test.

The ability to solve arithmetical problems has long been recognized as a sign of mental alertness. The score of this test when combined with the score of the general Information Test, frequently furnishes an accurate estimate of an individual's scholastic achievement.[16]

Memory Span for Digits.

As a test of general intelligence this test is among the poorest. Also this test generally correlates poorly with other tests of intelligence. It is commonly used because it is easy to administer and score, and it is specific to the type of ability it measures.[17]

Similarities Test.

All correlational studies show that a well constructed similarities test is one of the most reliable measures of intellectual ability. Important in this test, is the individual's ability to perceive the

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[14] Ibid., pp. 65-67.

[15] Ibid., pp. 68-69.

[16] Ibid., pp. 69-70.

[17] Ibid., p. 70.

Digit Symbol Test.

This test is one of the oldest and best established of all psychological tests. The subject is required to associate certain symbols with certain other symbols, and the speed and accuracy with which he does it serve as a measure of intellectual ability.[22]

Object Assembly.

This test is included in the test battery because the authors wanted at least one test which required putting things together into a familiar configuration. Among the comments made on this test are: "The Object Assembly, like the Block Design Test, seems to get at some sort of creative ability, especially if the performancy is done rapidly." The author notes that the best features of the test are its qualitative merits.[23]

Vocabulary Test.

An excellent measure of a man's general intelligence is the size of his vocabulary. The excellence of this test of intelligence may stem from the fact that the number of words a man knows is at once a measure of his learning ability. One objection to this is that a man's vocabulary is necessarily influenced by his educational and cultural opportunities.[24]

Cronbach briefly summarizes the virtues and defects of the Wechsler scale:

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[22] Ibid., p. 81.

[23] Ibid., pp. 82-83.

[24] Ibid., pp. 84-85.

common elements of the terms he is asked to compare and, at higher levels, his ability to bring them under a single concept.[18]

Picture Arrangement Test.

This test consists of a series of pictures which when placed in the right sequence, tell a little story. It effectively measures a person's ability to comprehend and size up a total situation. The subject matter of the test nearly always involves some human or practical situation. The understanding of these situations more nearly corresponds to what other writers have referred to as "social intelligence."[19]

Picture Completion Test.

This test is particularly good in testing intelligence at the lower levels. In a broad sense the test measures the ability of the individual to differentiate essential from non-essential details.[20]

Block Design.

This test was originated by Kohs, who offered it as a comprehensive measure of non-verbal intelligence. The Block Design is not only an excellent test of general intelligence, but one that lends itself admirably to qualitative analysis. One can learn much from the subject by watching "how" he takes to the task set him. This test correlates well with a variety of criterion measures, with total scale score and with most of the subtests of the scale.[21]

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[18] Ibid., pp. 72-72.

[19] Ibid., pp. 74-75.

[20] Ibid., p. 78.

[21] Ibid., pp. 79-80.

> It is efficiently designed, interesting to most subjects, and at least as valid for predictive purposes as the Stanford-Binet. It covers a broader range of tasks and affords exceptionally good opportunities for qualitative observation of behavior and thought processes. The norms for the test, once a point of serious criticism, have been greatly improved. As a practical individual test, the Wechsler falls short in only one particular: the scale has insufficient range to measure very high and very low abilities dependably.[25]

The outcome of any test of intelligence is usually an intelligence quotient, or I.Q. Morgan defines I.Q. as:

> A number obtained by dividing the chronological age into mental age and multiplying by 100.[26]

Actually the "intelligence quotient" in nearly every current test of intelligence is nothing more than a standard score. It is a convenient yardstick of mental ability relative to age, because it enables one to compare individuals of different ages even though they have different mental ages and past subtests that are quite different in difficulty.

In relating intelligence and vocational success, it is generally conceded that the I.Q. or mental age as a whole does not differentiate the successful from the unsuccessful groups of mental subnormals with competitive employment as the criterion.

T. G. Hegge examined the employment records of 177 boys who were paroled from the Wayne County Training School to meet war manpower shortages in 1941-42; they average 17 years of age with a mean I.Q. of 71.8. Eighty per cent of these obtained jobs, but the striking finding is that although these jobs covered a wide range of activities including many in

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[25]Cronbach, Lee J., Essentials of Psychological Testing, p. 202.

[26]Morgan, Clifford T., Introduction to Psychology, p. 676.

skilled categories, there was no significant correlation between the I.Q. at time of parole and the wage level obtained.[27]

After examining the social and occupational adjustment of a group of mentally subnormals comprising over 1% of the population of Delaware, Jastak and Whiteman concluded:

> One cannot help but be struck by the many similarities between the retarded and the non-retarded in many areas of adjustment. The lower degree of intelligence of the retarded group does not prevent a sizable number of them from working gainfully, with a good deal of stability and satisfaction.[28]

During the war years, Ramsey County, Minnesota, placed some of its wards in industry. Coakley reports that not only did these mentally subnormal individuals do well during a crisis, but some continued to maintain themselves outside of the institution. The report indicated that employers found subnormal individuals able to do monotonous repetitious jobs of the unskilled or semiskilled nature, with greater efficiency than a brighter person whose interest was not held by the job. There appeared to be no relationship between wages and I.Q. Coakley reports:

> Apparently it is not the mental level which is the primary determinant of an individual's success on a job, but instead, the personal traits and characteristics which he possesses. Employers have expressed interest most often in the individual's dependability,

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[27]Masland, R.L., Sarason, S.B., Gladwin, Thomas, Mental Subnormality, p. 304 (citing The occupational status of higher-grade mental defectives in the present emergency: A study of parolees from the Wayne County Training School at Northville, Michigan, pp. 86-98, by T. G. Hegge, American Journal of Mental Deficiency, Vol. 49, 1944).

[28]Masland, Sarason, and Gladwin, Ibid., p. 305 (citing The prevalance of mental retardation in Delaware, by J. Jastak and M. Whiteman, The Nature and Transmission of the Genetic and Cultural Characteristics of Human Populations, New York: Millbank Memorial Fund, 1957).

his ability to get along with other workers and to accept criticism, his interest in the job, and his desire to do his best.[28]

Perhaps the general attitudes regarding intelligence and employment are probably best summed up by Goldstein and Heber:

> The I.Q. has been too frequently regarded as a highly efficient predictor of an individual's level of vocational and social adjustment and of his ability to profit from an education and rehabilitation program.... The problem is not so much the test as the interpretation which has been given it.[29]

General Working Ability

Windle reports that intelligence has been found highly related to likelihood of release of a mentally subnormal individual from an institution, but intelligence has not been found prognostic for adjustment after release. Windle suggests:

> The absence of this relation which would be expected on the basis of common sense indicates a selective bias in the nomination of patients for release, wherein the brighter institutionalized patients must have more severe complicating handicaps than less bright patients to fall in the same population...[30]

> There is concensus that good working ability is favorable to outcome. (release from the institution) This is true for all populations studied: inmates, parolees, and dischargees. However, the measures used to demonstrate this relation vary and in some cases measures expected to reveal the relation fail to show statistically significant differences.[31]

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[28]DiMichael, S.G., Vocational Rehabilitation of the Mentally Retarded, p. 87.

[29]Appell, Melville J., Williams, Clarence M., and Fishell, Kenneth N., "Significant Factors in Placing Mental Retardates from a Workshop Shop Situation," The Personnel and Guidance Journal, p. 260.

[30]Windle., op. cit., p. 135.

[31]Ibid., p. 100.

> In spite of the large amount of verbal homage paid to patients' working ability as an index of success on placement, there has been little attempt to do research on this factor. This looks like one of the most fruitful areas in which to search for prognostic indices.[32]

In developing programs from the vocational training of mentally subnormal youth, Cohen (1959) states it is essential that educators be aware of the reasons for failure of individuals on vocational placements. An analysis was made of factors related to 73 unsuccessful placements of 57 students of the Edward R. Johnstone Training and Research center, Bordentown, New Jersey. Thirteen of these students had two placements while three had three placements. Of the 57 students considered in this paper, 41 were boys and 16 were girls. This difference approximates the ratio of boys to girls within the institutional population. With only a few exceptions, the analysis showed that students were able to meet the skill and strength demands of the job. Three major reasons were given for unsuccessful placements:

1. About 30% of the students experienced difficulty in his adjustment to the community rather than on the job itself.

2. Nearly 20% of the students were returned to the school because of generally poor attitudes with regard to their jobs.

3. Over 25% were returned due to the fact that they demonstrated a lack of readiness for employment or had difficulty in adjusting to employment, as distinguished from lack of job skills. The lack of readiness was reflected in such terms as: immature, lazy or vulgar. (An additional small group with a similar difficulty was that reported as not emenable to supervision.)

Cohen makes the recommendation:

> An institutional program which is designed to return students to the community must include as a part of the gradual

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[32] Ibid., p. 135.

> step-by-step progression to community release, opportunities for the student to participate in various social and vocational experiences with a minimal amount of supervision. This would enable the student to develop a greater feeling of responsibility and would better equip the student for ultimate placement.[33]

Kolstoe, (1960) is in partial agreement with Cohen, in that work sample seems to be the best present predictor of job success, but states that as yet this observation does not seem to have been validated.[34]

Kolstoe also points out the concern of the Federal Office of Vocational Rehabilitation for finding out just what makes an individual employable. The required skills for successful placement of mentally subnormal individuals have been stated and restated many times by many rehabilitation personnel. Never-the-less there is a severe lack of quantitative information of the relation of these skills to successful placement and employment.[35]

Research and demonstration grants from the Office of Vocational Rehabilitation have been issued to many Goodwill Industries, and other foundations for the establishment of Pre-Vocational Training and Sheltered Workshops. The progress reports of these organizations annually list relatively comprehensive and homogeneous characteristics to be considered for successful placement of mental subnormals. The primary problem is

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[33]Cohen, Julius S., An analysis of Vocational Failures of Mental Retardates Placed in the Community After a Period of Institutionalization, American Journal of Mental Deficiency, 65:701, May 1961.

[34]Kolstoe, Oliver P., "The Employment Evaluation and Training Program," American Journal of Mental Deficiency, 65:30, June 1960.

[35]Ibid., pp. 29-30.

that these organizations fail to delineate how much of each characteristic one must have to be employable or placed successfully.

A study by Warren, to determine if certain specific and/or general factor s were instrumental in the employment or unemployment of mentally subnormal males was done in 1961. A secondary purpose of this study was to validate a rating scale consisting of factors currently used at the Employment Evaluation Project, on the campus of Southern Illinois University. Two groups, one employed and the other unemployed, were compared as to the ratings they received on job tryouts. Twenty-seven subjects were in the employed group and eleven subjects were in the unemployed group. It was found that out of sixteen specific factors rated, eleven factors were rated significantly higher for the employed group. Three general factors made of the specific factors were also rated significantly higher for the employed group. It was concluded by Warren that these significant factors were instrumental in the employment or unemployment of the group studied, and that the rating scale by which the data were gathered was a useful predictor of potential employment.[36]

It is felt by the writer that it is this sort of research which is needed to systematically define the characteristics of mentally subnormal individuals in order that they may be more effectively trained, placed and employed.

Not until more research along these lines is done will the schools, institutions and occupational training facilities be able to realize the

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[36]Warren, Fount G., "Employed and Unemployed Mentally Handicapped Males, American Journal of Mental Deficiency, 65: 629-633, March 1961.

maximum potential of the yet untapped occupational assets of the mentally subnormal individual.

CHAPTER III

PROCEDURE

Subjects

The subjects in this study were 25 mentally subnormal adults residing at the Montana State Training School, Boulder, Montana. These individuals represented the total number of inmates on the list for potential placement outside of the institution, meeting the selection criteria for this study of:

1. Having been administered the WAIS
2. Being in the institution for more than one year
3. Having been on a job over six months
4. Having a supervisor's evaluation form on file.

Some of the younger subjects were receiving academic training and working part-time, but most of the individuals were assigned to full-time jobs in the institution. The characteristics of the subjects are set forth in Table 1.

Table 1. CHARACTERISTICS OF SUBJECTS

	N	Age Mean	Age Range	I.Q. Mean	I.Q. Range
Females	8	39 years	50-27	63	77-52
Males	17	28 years 3 months	42-18	67	83-53
Totals	25	32 years 10 months	50-18	66	83-52

The table reveals with the exception of age there was little evidence of sex differences. The females, with a mean of 39 years, averaged

10 years and 3 months older than the males. They also tended to score a few points lower on intelligence tests. All of the tests were Wechsler Adult Intelligence Scales tests.

Collection of Data

Each subject had been administered the WAIS by a qualified tester within the last five years. The raw scores of the eleven subtests were recorded for each subject, and arranged by the experimenter in such a way that they could be easily programmed for the computer.

Staff members who were in immediate contact with the subjects on the job, i.e., nurses and attendants in the hospital, foreman and mechanics in the maintenance shop, etc., provided evaluations for the subjects' occupational readiness. These evaluators had not special training except that obtained incidentally in their duties. They ranked the subjects 1-5 (1 being the highest rating - 5 being the lowest rating) on ten criteria listed on the supervisor's evaluation form:[1]

1. Response to Instruction
2. Care and Proper Use of Tools and Equipment
3. Self-Improvement
4. Cooperativeness with Supervision
5. Relationship with Co-Workers
6. Safety Habits
7. Self-Control
8. Job Know How

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[1]The Supervisor's Evaluation Form is in Appendix A.

9. Courtesy

10. Respect for Rights and Property of Others.

With the exception of evaluations already on file in the main office, the staff members made the evaluations at the same time that the data from the intelligence tests were being collected. The evaluations previously submitted to the office had been made within two months prior to this study. Each subject was evaluated by three different supervisors, each supervisor evaluating only subjects with whom he worked.

Computation

The evaluations made by the supervisors were randomly assigned to three catagories; A, B, and C. In each catagory there was one evaluation form for each subject. The rankings in each catagory were totaled, and a test of inter-rater reliability was made. "The Machine Formula for Computing the Pearson r from Raw Scores" was used to compute the Pearson r between : A and B, B and C, and A and C. The Pearson r's obtained were changed to Fisher Z's, averaged, and this Z was converted back to an r which was found to be indicative of significant reliability among the raters.

The rankings in each catagory, per subject, were totaled and the means of the totals were computed and then correlated with the raw scores of the eleven subtests of the WAIS. Also the ratings obtained by the subjects on each of the 10 items of the supervisor evaluation from were correlated with the WAIS subtest raw scores. These correlations were computed using the 1620 Model 2 IBM computer located in the Ryan Laboratory Computer Center at Montana State University, Bozeman, Montana.

CHAPTER IV

RESULTS

Inter-rater Reliability

The ratings by three separate groups of supervisors on the supervisor evaluation form were tested for inter-rater reliability using the "machine formula for computing the Pearson r from raw scores."[1] The results are presented in Table 2.

TABLE 2. CORRELATIONS BETWEEN THE RATINGS OF THREE SEPARATE GROUPS OF SUPERVISORS, A, B, AND C, AND THE AVERAGE OF THE CORRELATIONS.

Rater	Rater	r
A	B	.87
B	C	.86
A	C	.82
	Average	.85

With 23 degrees of freedom, r would need to be .505 to be significant at the 1 per cent level, in order to reject the hypothesis, that there is no significant difference between the raters. Since the average r is .85, the hypothesis was not rejected with the probability of a Type I error of .01[2]

[1]Downie, N.W., and Heath, R.W., Basic Statistical Methods, p. 85.

[2]Edwards, Allen, Statistical Methods for the Behavioral Sciences, pp. 255-347.

Correlations Between Subtests and Evaluations

The relationship between the eleven subtest of the WAIS and the mean of the scores obtained on the supervisor evaluation form by the 25 subjects is shown in Table 3.

TABLE 3. CORRELATION BETWEEN THE ELEVEN SUBTESTS OF THE WECHSLER ADULT INTELLIGENCE SCALE AND THE MEAN OF THE TOTAL SCORES OBTAINED ON THE SUPERVISOR EVALUATION FORM BY THE TWENTY-FIVE SUBJECTS

Subtests	$\bar{X}^*$	$\bar{Y}$	r
Verbal			
Information	5.44	26.38	.2984
General Comprehension	7.88	26.38	.0788
Arithmetic Reasoning	3.48	26.38	.2081
Similarities	2.68	26.38	.0915
Digit Span	6.68	26.38	.2124
Vocabulary	12.20	26.38	.2592
Performance			
Digit Symbol	23.08	26.38	.1013
Picture Completion	5.80	26.38	-.1826
Block Design	16.16	26.38	-.0239
Picture Arrangement	11.00	26.38	-.0632
Object Assembly	21.80	26.38	-.0313

*$\bar{X}$ = Subtest mean (Independent Variable), $\bar{Y}$ = Evaluation form mean (Dependent Variable), r = correlation

Table 3 shows that the highest r obtained from correlating the total supervisor evaluation form with the eleven subtests of the WAIS was .2984. In order to reject the hypothesis that no relationship exists between the supervisor evaluation form and the eleven subtests of the WAIS at the .10 per cent level of significance, all of the r's would have had to be .3374. Therefore, the hypothesis of no significant relationship at the .10 per cent level of significance was accepted.

The ten items of the supervisor evaluation form were correlated with the eleven subtests of the WAIS. The results are reported in Table 4.

In Table 4, it is shown that a relationship does exist at the .10 per cent level of significance (r = .3374) between the following:

1. Response to Instruction and Digit Span (r = .365)
2. Response to Instruction and Vocabulary (r = .398)
3. Care and Proper Use of Tools and Equipment and Picture Arrangement (r = -.356)
4. Self-Control and Digit Symbol (r = .340)
5. Courtesy and Picture Completion (r= -.490)
6. Respect for Rights and Property of Others and Information (r = .360)
7. Respect for Rights and Property of Others and Arithmetic Reasoning (r = .459)

TABLE 4. CORRELATIONS BETWEEN THE TEN ITEMS OF THE SUPERVISOR EVALUATION FORM AND THE RAW SCORES OF THE ELEVEN SUBTESTS OF THE WECHSLER ADULT INTELLIGENCE SCALE

Supervisor Evaluation Form Items	Wechsler Adult Intelligence Scale Subtests										
	I**	C	A	S	DS	V	DSy	PC	BD	PA	OA
Response to Instruction	.281	.121	.054	.018	.365*	.398*	.206	.004	.159	-.207	.059
Care and Proper Use of Tools and Equipment	.085	.199	.252	-.092	.299	.251	.013	-.335	-.164	-.212	-.356*
Self-Improvement	.012	-.154	.159	.122	-.095	.046	.027	-.258	-.089	-.106	-.050
Cooperativeness with Supervision	.253	-.056	.295	.236	.082	.195	-.114	-.088	.037	.082	-.114
Relationship with Co-Workers	.279	.051	.085	.236	.290	.214	.284	-.077	-.069	.164	.007
Safety Habits	.258	.089	.025	-.017	.270	.151	.161	-.159	-.064	-.150	-.081
Self-Control	.116	-.007	.022	.121	.048	-.035	.340*	.241	.174	.160	.209
Job Know How	.224	-.053	.038	-.100	.198	.224	.189	.038	.086	-.130	.128
Courtesy	.304	.101	.056	.037	.031	.299	-.146	-.490*	-.189	-.264	-.118
Respect for Rights and Property of Others	.360*	.327	.459*	-.018	.007	.181	-.120	-.009	-.004	.222	-.138

*r's significant at the .10 per cent level

**I = Information, C = General Comprehension, A - Arithmetic Reasoning, S = Similarities, DS = Digit Span, V = Vocabulary, P = Performance, DSy = Digit Symbol, PC = Picture Completion, BD = Block Design, PA = Picture Arrangement, OA = Object Assembly

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

It has been the purpose of this study to ascertain if there was any relationship between supervisor evaluations of occupational readiness, and the raw scores of the eleven subtests of the Wechsler Adult Intelligence Scale and to determine whether or not there was any reliability between the supervisors' evaluations of the mildly mentally subnormal institutionalized adult.

The subjects were 25 mildly mentally subnormal adults in the Montana State Training School. Of the 25 subjects 8 were female and 17 were male

The raw scores of the eleven subtests of the WAIS were obtained from the institution files together with one supervisor rating for each subject. Two more supervisor ratings per subject were obtained by the experimenter from supervisors who had not previously been asked to evaluate the subject.

The ratings of the supervisors were checked for inter-rater reliability and were found to be significantly reliable. All the evaluations for the 25 subjects were totaled and the mean was correlated with the means of each of the eleven subtests. There was found to be no significant correlation between the supervisor evaluation form and the eleven subtests.

The ten items of the supervisor evaluation form were individually correlated with the raw scores of the eleven subtests of the WAIS. Five

of the items were found to correlate with six of the subtests at the .10 per cent level of significance.

Conclusions

Conclusions drawn from a review of literature are as follows:

1. The primary determinant of an individuals success on a job is not his mental level, but instead, the personal traits and characteristics which he possesses.

2. There is severe lack of quantitative information of the relation between hypothesized required skills for successful job placement of mental subnormals, and their actual successful placement and employment.

3. There is a definite need for research toward finding a systematic device or measurement for identification of skills and characteristics of occupational readiness directly correlated with successful employment.

4. There is a definite need for the development of sophisticated predictive devices which will facilitate the successful placement of mental subnormals into occupations at which theycan succeed.

The results of this study led to these conclusions:

1. Supervisor evaluations of occupational readiness of institutionalized mentally subnormals can be considered to be usually reliable.

2. A standardized supervisor evaluation form must be developed which more accurately delineates the specific aspects of occupational readiness.

3. Without further study accurate prediction of occupational readiness of institutionalized mentally subnormals from the raw scores of the WAIS subtests is not possible.

Recommendations

Six recommendations for further study of the prediction of occupational readiness using the WAIS subtests are suggested:

1. A similar study to the one presented should be conducted using a larger sample.

2. Additional studies should be conducted to develop a standardized supervisors evaluation from of occupational readiness.

3. A similar study should be made using different correlational techniques.

4. Similar correlational studies should be conducted using the scaled scores of the WAIS subtests instead of raw scores.

5. A study should be conducted using a different measure of intelligence, i.e. The Stanford-Binet.

6. A similar study should be made with the supervisors evaluation form correlated with the WAIS subtests of individuals with average and above average I.Q.'s to define the actual meaning of the previously noted, obtained r's.

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APPENDIX A

APPENDIX A

SUPERVISOR EVALUATION FORM

NAME_____ JOB_____

A. Response to Instruction (Rating the learner's ability and willingness to follow instructions).
   1. Needs very little instruction and is able to follow through on an assignment.
   2. Needs moderate amount of instruction and then is able to follow through on an assignment.
   3. Needs average amount of instruction and then is able to follow through on an assignment.
   4. Needs a great deal of instruction and then is able to follow through on an assignment.
   5. Even with a great deal of instruction, he (she) cannot follow through on an assignment unless there is close supervision.

B. Care and Proper Use of Tools and Equipment (Rating the learner's sense of responsibility and his knowledge of handling tools properly.
   1. Not only careful of tools and equipment at all times, but does extra jobs.
   2. Always careful in care and use of tools and equipment.
   3. Generally is careful in the care and use of tools and equipment.
   4. Occasionally misuses, misplaces and damages tools and equipment.
   5. Continually misuses, misplaces, and damages tools and equipment.

C. Self-Improvement (Rating how learner applies himself to work assigned).
   1. Needs little supervision; always industrious; completes his work, asks for more.
   2. Needs some supervision; consistent worker; does the job at hand.
   3. Works under supervision without too much prodding, at times fails to complete job at hand.
   4. Wastes time; lazy; frequently fails to finish the job at hand.
   5. Wastes too much time; bothers others; rarely completes the job at hand.

D. Cooperativeness with Supervision (Rating the learner's ability to take criticism and profit by it).
   1. Is consistantly helpful and always receives instructions with a pleasant attitude.
   2. Is helpful in most instances and usually receives instructions and criticisms with a pleasant attitude.
   3. Occasionally difficult to work with and sometimes complains about duties or criticisms from supervisors.
   4. Frequently does not comply with instructions and openly defies criticisms from supervisors.
   5. Will not comply with instructions.

E. Relationship with Co-Workers (Rating learner's ability to work with others).
   1. Achieves quick and easy acceptance with whole group.
   2. After a short period of time achieves harmonious relations with most of the working group.
   3. Achieves acceptance by only a few members of the working group.
   4. Is generally not accepted within working group.
   5. Cannot adapt self to the group, shows little tact or cooperation toward others, trouble maker.

F. Safety Habits (Rating the degree to which the learner minimizes chance for accident).
   1. Always careful; takes not chances; protects others.
   2. Careful worker; rarely takes chances.
   3. Usually careful, takes few chances.
   4. Sometimes careless, may take chances.
   5. Dangerous worker; chance taker.

G. Self-Control (Rating the degree to which the learner displays mastery of himself on the job).
   1. Has exceptionally good control of his emotions; even-tempered under trying circumstances.
   2. Even-tempered; does not become unduly excited or distrubed; good control of feelings.
   3. Becomes disturbed and excited at times; occasionally displays extremes of fear and inferiority.
   4. Becomes unduly disturbed easily; highly emotional; unwilling to accept blame.
   5. No self-control what-so-ever.

H. Job Know How (Rating how well the learner acquires and applies knowledge and skills needed in the work or classroom area).
   1. Shows exceptional ability to acquire and apply knowledge and skills.
   2. Shows above average ability to acquire and apply knowledge and skills.
   3. Shows average ability to acquire and apply and skills.
   4. Shows little ability in either acquiring or applying knowledge and skills.
   5. Shows practically no ability in either acquiring or applying knowledge and skills.

I. Courtesy (Rating the learner's attitude towards other people).
   1. Always courteous, throughful and considerate of others.
   2. Most always thoughtful, courteous, and considerate of others.
   3. Displays average amount of thoughtfulness, courtesy and consideration.
   4. Shows some courtesy, thoughtful, and consideration towards others.
   5. Shows little courtesy, throughtfullness, and consideration towards others.

J. Respect for Rights and Property of Others (Rating the learner's attitude towards others and their property).
   1. Absolutely trustworthy.
   2. Resists all ordinary temptations; needs no watching.
   3. Observes accepted standards with few lapses.
   4. Has difficulty in resisting any temptation.
   5. Cannot be trusted, needs constant watching.