THE PORTEUS MAZE TEST AND PERSONAL EFFECTIVENESS AS PREDICTORS OF EMPLOYABILITY AMONG MENTALLY RETARDED ADOLESCENTS

Thesis for the Degree of M. A.

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ABSTRACT

THE PORTEUS MAZE TEST AND PERSONAL EFFECTIVENESS AS PREDICTORS OF EMPLOYABILITY AMONG MENTALLY RETARDED ADOLESCENTS

by Salvatore Gambaro

The Porteus Maze Test (PMT) and a Rating Scale of Personal Effectiveness (RSPE) were used as predictors of the employability of mentally retarded adolescents.

The PMT was administered to 71 mentally retarded adolescents, ranging from 16 to 19 years of age. All the Ss were attending high school in the Special Education Department of Lansing, Michigan, and working part time as employees in a special work training program. Forty of the 71 Ss had been in the training program previous to September, 1962 and formed the Critical Score (CS) sample. The 31 remaining Ss had been in the program since September, 1962 and formed the Replication (R) sample.

A RSPE was filled out on each S by his teacher. It was scored to yield a total weighted rating score for each S. These scores were used in all analyses involving the RSPE. The scale items have to do with specific and general personal characteristics presumed to reflect vocational potential of mentally retarded adolescents.

Employers also filled out a RSPE for each of the Ss in his employ. The ratings were independent of the teacher's, and neither party knew the other was rating the Ss. On their rating sheet for a S the employers also checked an item which asked whether or not they would hire the S if a job were available. This employability item was the criterion measure. Although the employers filled out the entire rating sheet, only the criterion measure item on their sheets was used in data analysis.

The critical score on the PMT was empirically derived so as to give maximum success in prediction. Correct prediction was possible for 78 per cent of the CS Ss. The relative proportion of false negatives was somewhat less than the relative proportion of false positives. Using the same critical score for the R sample, it was possible to predict correctly for 74 per cent of the Ss. The relative proportion of false negatives was again somewhat less than the relative proportion of false positives. It was concluded that the PMT did particularly well in predicting when an employer would hire a S, but not so well in predicting when he would not.

A critical score was also established with the RSPE. For the CS and R groups, respectively, it was possible to correctly determine for 85 and 90 per cent of the Ss whether or not they would be hired. These somewhat higher overall hit rates are not significantly different from those obtained with the PMT.

Further examination of the data showed that better prediction was obtained for Ss scoring above than for those scoring below the critical value on either one of the scales. In addition, almost perfect prediction was obtained by using the more stringent standard of scoring above or below the critical value on both scales.

It seems clear that the PMT and RSPE might profitably be used as screening devices in work training programs such as that involved in the present study. The PMT could be used to select those who will initially enter the program, and the teachers' ratings on the RSPE could be obtained early in the program and used for final selection. In the present study, if the standard set for remaining in the program was a score above the critical value on both the PMT and RSPE, perfect prediction could be obtained regarding who would be hired.

Data were not collected that would allow some kind of quantification of savings--e.g., cost, time, or efficiency of training--to be derived by screening out those who would later prove to be unhirable. It seems certain, however, that an appreciable and worthwhile savings might accrue by instituting both scales in a screening procedure.

A closing note of tentativeness is necessary concerning the criterion used. It can be considered a fair and adequate measure of employability only to the extent that the employer's judgment is a fair and adequate measure of employability,

and only to the extent that he does what he says he will do in hiring.

Approved:

R. E. McMichael
Chairman, Thesis Committee

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By

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TABLE OF CONTENTS

LIST OF TABLES

BACKGROUND OF THEORY AND RESEARCH

Assessments of learning and adaptive capabilities of retarded children are difficult operations. Masland, Sarason and Gladwin (1958), and Haggard (1954) have shown that instruments such as the Stanford-Binet and the Wechsler-Bellevue may prove inadequate for the task. As Baldwin (McClelland, Baldwin, Bronfenbrenner and Stodbeck, 1958) remarks, in trying to describe specific abilities, one is actually trying to identify systems of adaptive behavior. Moreover, ability cannot be considered to be unidimensional, as there may be a variety of ways of accomplishing the same result.

Early in the century, Porteus (1959) suggested a reason for the discrepancy between measured intelligence and adaptive behavior by criticizing existing intelligence scales. He maintained that the major weakness of all commonly used intelligence tests was their failure to measure "planfulness" or "prehearsal". He felt that this capacity was essential to most practical life situations and that the failure of the tests to provide this measure results in faulty diagnosis or evaluation of the individual. Porteus (1959) stated that, "A necessary component of a basic intelligence index is a measure of planfulness," and that " . . . no diagnostic examination should be considered complete without some measure of planfulness

as an essential factor in intelligence." (p. 22). Porteus has offered his series of mazes as a measure of "foresight," "planfulness" or "practical adaptability." He has defined "planfulness" as "the ability to put to prudent use what planning ability we possess."

Among others, Guilford (1956) has presented evidence that is in at least partial support of Porteus' claims concerning what his mazes measure. In this connection he states, "Porteus has maintained that his series of maze tests measure foresight. He can well claim support from the factor analysis just mentioned. The type of foresight measured by maze tests, however, is of a concrete variety. This ability may be important for the architect, the engineer, and the industrial layout planner. It may not be found in the political strategist and the policy maker. So far as our results go, the Maze Test should by no means be offered as a test of general intelligence." (Guilford, 1956, p. 273). In a doctoral dissertation concerned with planning as a non-intellective component of intelligent behavior, Small (1954) also concluded that his results confirmed and supported Porteus' claims that the Mazes measure a personality or non-intellective characteristic of intelligence not encompassed by standard intelligence tests and that this feature could meaningfully be called foresight.

Other studies dealing with the Mazes have not been directly concerned with what underlying ability the Mazes measure, but rather with their predictive or discriminative

capability. Gibbons (1943), for example, using a special method of scoring, demonstrated the usefulness of the Maze Test in choosing foremen in an industrial concern. Docter and Winder (1954), using a method of qualitative scoring of the Mazes, present data which indicate that the Porteus Maze effectively discriminates groups of delinquent boys from non-delinquent boys. And Dentler and Mackler (1962) have used the Maze Test as a predictor of several types of functioning abilities of retarded children known to be pertinent to life in an institution; namely, language ability, perception of physical surroundings and social maturity. The Environmental Map Tests, the Parson's Language Sample and Dolls' Vineland Social Maturity Scale were used, respectively, as criteria for these functioning abilities. Dentler and Mackler concluded that, for three out of four subjects, the Porteus Maze was an excellent predictor of level of functioning as measured by these three scales.

At present, it seems clear that the Porteus Maze Test may effectively measure a factor or factors important in a number of life situations. Just what is being measured, although not altogether clear, seems to involve behavior sequences which can best be described as foresight.

PROBLEM

The present investigation is best described as an empirical prediction study. It was concerned with the use of the Porteus Maze Test as a predictor of employability of mentally retarded adolescents. The question prompting the study was, "Can a critical score be derived on the Porteus Maze Test that will separate those retardates who will later be hired from those who will not?"

The predictive relationship between rated personal characteristics and employability was also investigated. Comparison of this relationship with that of the Porteus Test and employability makes it possible to evaluate whether the better selection procedure would be to use the Porteus Test alone or in combination with another instrument.

METHOD

Subjects

The Ss were 71 mentally retarded adolescents--25 girls and 46 boys. Their age range was from 16 to 19 years. This sample constituted all of those from a Lansing Special Education Department population of 84, for whom complete and usable test information was obtained.[1] All of the Ss were in a work-experience program for the mentally handicapped (i.e., IQ score 50-79) in operation at the high school level in the Lansing Public Schools. Students in this program go to school on a part time basis and work part time with employers cooperating in the program. The Special Education Department maintains classes in three high schools in the city of Lansing, and every S attends that school which is geographically closest to his home.

Critical Score (CS) and Replication (R) Samples: The 40 Ss who had been in the work-experience program prior to September,

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[1]At the beginning of the study there were 62 different employers and 84 possible Ss. Thirteen of the possible 84 Ss could not be included in the study as: 2 dropped out of the program and could not be tested, 3 had unusable rating sheets because of misunderstood instructions, and 8 employers failed to return rating sheets.

1962 formed the OS sample. The remaining 31 Ss had been in the work-experience program since September, 1962 and formed the R sample.

Measures

Porteus Maze Test (PMT): The PMT was administered to each S, and scored in accordance with the instructions set forth by Porteus (1959). A mental age score was derived and then converted into a test quotient. The test quotient was the score used in all analyses.

Rating Scale of Personal Effectiveness (RSPE): Personal effectiveness was assessed by a rating scale devised by Warren (1961) for use with mentally retarded adolescents. The scale is made up of 18 items, the items having to do with such characteristics as punctuality, cooperativeness, and showing initiative. (See Appendix A.)[2]

A RSPE was filled out on each S by both his teacher and employer. Neither party knew that the other party was also filling out a rating scale on the S. The teacher rated the S on each item in relation to his average student in the program,

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[2]The relationship between scores on the PMT and each item on the RSPE was determined in a pilot study. There was a high positive relationship between the PMT and ten of the items, a low positive relationship between the PMT and five of the items, and no relationship between the PMT and three of the items. The results are presented in Appendix B.

and the employer in relation to his average employee. For each item the S was to be rated as "less than," "same as," or "more than" the average student or employee.[3]

In order to avoid obvious contamination of the criterion measure, only the teachers' ratings were scored for use in data analysis. The RSPE was scored to yield a total weighted rating score for each S. For any item "less than" ratings were assigned a weighted score of 1, "same as" a score of 2, and "more than" a score of 3. The minimum possible score was 18 and the maximum 54.

Employability: At the bottom of the RSPE sheet, employers checked one of four categories--Yes, Probably, Probably not, No--in response to the question, "Would you be willing to hire this individual as you would your average applicant, if a job were available?" This employability item was the criterion measure. Those Ss for whom the employer checked either "Yes" or "probably" were classed together under Employable. Those Ss for whom the employer checked either "Probably not" or "No" were classed together under Not Employable.

Procedure

PMT: The Porteus Test was administered to each S in a private office of the school which he was attending.

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[3]In the pilot study the teacher and employer ratings correlated .94, indicating a rather high degree of inter-rater agreement.

RSPE: At the head of each group of Special Education students in the three high schools is a teacher. Besides teaching he has a regular time set aside each day for counseling and placement. He obtains employment for the students with an employer willing to cooperate in the program, and maintains close communication with the employer in order to gauge the students' work progress. The three teachers were asked to fill out a rating sheet on each of their student-trainees. They were given a form letter (see Appendix C) which described the project and gave instructions on how to fill in the rating sheet. In the form letter they were informed that their responses would be used in a research project and, therefore, were encouraged to be as objective as possible. They were also reassured that their ratings would in no way influence the S school or job standing.

Every employer was sent a rating sheet with his employee's name on it, a copy of another form letter (see Appendix D), and a stamped addressed envelope for the return of the rating sheet. The form letter sent to the employer was the same as that given to the teacher-coordinator except for slight changes of phrasing to make it more appropriate to the work situation. Particularly in the case of the employers was reassurance called for concerning the student-trainee's job standing, since every employer had previously signed a work-training agreement with the school specifying that he would keep the trainee employed for one year. Although the employer rated the S on every item, only

his response to the criterion measure item was used in data analysis.

Data Collection and Analysis: The steps in data collection were the same for all Ss. During the time the rating scales were being filled out and returned by the teachers and employers, the investigator administered and scored the PMT for all the Ss. After all the rating sheets were returned, or otherwise accounted for, they were scored. The scored protocols for both the PMT and RSPE were then identified as belonging to a particular S in either the CS or R groups. The data were subsequently assembled and analyzed separately for first the CS and then the R sample.

RESULTS

There were no sex or age differences on either the PMT or RSPE. Therefore, sex and age were disregarded in all analyses. Fisher Exact Probability Tests and one-tailed rejection regions were used for all comparisons (Siegel, 1956). The p values reported are exact probabilities.

The results for the CS sample are most conveniently considered first, then the results for the R sample.

CS Sample

PMT: A score of 113 on the PMT gave maximum success in discrimination. Table I presents the summary data. The entries in the cells in this and following tables are number of Ss. A Fisher Exact Probability Test yields a p value of .007. The employers indicate they would hire 78 per cent of the Ss in this sample, and although correct placement does not occur for 100 per cent of the cases, it is impressively frequent. On the basis of their PMT score 32 out of 40 Ss are correctly placed with respect to whether or not they would be hired. Inspection of the data in Table I also shows that the hit rate is relatively better within the Employable than it is within the Not Employable category; or, in other words, the relative proportion of false negatives within the Employable category is less than the

relative proportion of false positives within the Not Employable category.

TABLE I

COMPARISON OF PMT SCORE POSITION AND EMPLOYERS' JUDGMENT FOR CS SUBJECTS

PMT Score Position	Employers' Judgment Employable	Not Employable
Above 113	26	3
Below 113	5	6

RSPE: In determining the critical rating score the teacher rating for each S was used. A critical score of 33.5 on the RSPE was maximally effective in discriminating those who were likely to be hired or not. The probability associated with a set of observations as or more extreme than those in Table 2 is .0005. Correct placement is again impressively frequent; viz., 35 out of 40 Ss are correctly classified. In comparison to the corresponding PMT data, the relative proportion of false negatives is about the same while the relative proportion of false positives drops a bit.

PMT and RSPE: A brief re-examination of Tables I and 2 shows that better prediction is obtained for those Ss scoring above than for those scoring below the critical score on either the PMT or RSPE. This is due to a positive skewing of the

TABLE 2

COMPARISON OF RSPE SCORE POSITION AND EMPLOYERS' JUDGMENT FOR OS SUBJECTS

RSPE Score Position	Employers' Judgment Employable	Not Employable
Above 33.5	27	1
Below 33.5	4	8

two score distributions. In Table 3 the data have been assembled using the S's score position on both the PMT and RSPE.

Inspection of Part A of Table 3 shows that using the double standard results in perfect placement of those Ss scoring above or below the critical values (i.e., eliminates both the false positives and false negatives). A Fisher Test based on the data presented in Part A gives a p value of .00001. The set of differences observed in Part B is not statistically significant, indicating that scoring above the critical value on the RSPE and below on the PMT is not significantly more likely to result in being considered employable than scoring above on the PMT and below on the RSPE.

R Sample

PMT: Having established critical scores on the PMT and RSPE with the OS sample, the next question was whether or not these scores would continue to be prognostic with a new sample of Ss.

TABLE 3

COMPARISONS OF PMT-RSPE SCORE POSITION AND EMPLOYERS' JUDGMENT FOR CS SUBJECTS

PMT-RSPE Score Position	Employers' Judgment Employable	Not Employable
PART A		
+PMT[a] +RSPE	22	0
-PMT -RSPE	0	5
PART B		
+PMT -RSPE	4	3
-PMT +RSPE	5	1

[a]Plus sign indicates above, a minus sign below, the critical score on the scale.

Tables 4, 5, and 6 present the summary data on the PMT, RSPE, and PMT-RSPE, respectively, for the 31 Ss in the R sample.

The critical score on the PMT derived with the CS group continues to give a high rate of correct prediction. Inspection of Table 4 shows that correct prediction was obtained for 23 of the 31 Ss, and this overall hit rate is quite comparable to that observed in the CS sample. A Fisher Test on the set of

TABLE 4

COMPARISON OF PMT SCORE POSITION AND EMPLOYERS' JUDGMENT FOR R SUBJECTS

PMT Score Position	Employers' Judgment Employable	Not Employable
Above 113	15	4
Below 113	4	8

observations in Table 4 gives a p value of .015. The employers indicate they would hire 61 per cent of the Ss in this sample, a slight drop in the proportion from that observed in the CS sample. Although perfect placement of these Ss does not occur, it is relatively frequent; viz., 79 per cent are correctly placed. A further statistical check on the per category hit rate differences for the CS and R samples shows that they do not differ significantly.

RSPE: The original critical value on the RSPE also continues to yield a high rate of correct predictions. The probability associated with a set of observations as or more extreme than those in Table 5 is .000003. Twenty-eight of the total 31 Ss are correctly placed. There are no false positives, and three false negatives. The overall and per category hit rates observed here differ very little from those observed in the CS sample (see Table 2).

Somewhat higher overall and per category hit rates with the RSPE than with the PMT again occur with the R sample.

TABLE 5

COMPARISON OF RSPE SCORE POSITION AND EMPLOYERS' JUDGMENT FOR R SUBJECTS

RSPE Score Position	Employers' Judgment Employable	Not Employable
Above 33.5	16	0
Below 33.5	3	12

However, the over-all and--except in one instance--the per category hit rate differences of the two scales are not statistically significant for either the CS or the R sample. The one exception occurs with the R sample where the hit rate in the Employable category is significantly higher using the RSPE ($p < .01$, as determined by binomial expansion).

PMT and RSPE: Further inspection of the data in Tables 4 and 5 indicates that as in the CS sample better prediction is obtained in those instances where a S scores above or below the critical value on both scales. In Table 6 the data have been assembled using the Ss score position on both the PMT and RSPE. The probability associated with a set of observed values as or more extreme than those in Part A of Table 6 is .00003. Perfect prediction is again obtained for those Ss scoring above the critical values. Except for one false negative, this would also be the case for those Ss scoring below the critical values.

TABLE 6

COMPARISONS OF PMT-RSPE SCORE POSITION AND EMPLOYERS' JUDGMENT FOR R SUBJECTS

PMT-RSPE Score Position	Employers' Judgment Employable	Not Employable
PART A		
+PMT[a] +RSPE	13	0
-PMT -RSPE	1	8
PART B		
+PMT -RSPE	2	4
-PMT +RSPE	3	0

[a]Plus sign indicates above, a minus sign below, the critical score on the scale.

As with the CS sample it appears from inspection that Ss scoring above the critical score on the RSPE and below on the PMT are more likely to be judged hirable by the employer. However, the set of differences presented in Part B of Table 6 are not significant. In addition, even if the data from both samples are combined the differences are still not significant.

DISCUSSION

An affirmative answer can be given to the question prompting this study, namely, "Can a critical score be derived on the Porteus Maze Test that will separate those retardates who will later be judged hirable from those who will not?" Due regard, however, is called for concerning the limits of this affirmative answer. For example, the criterion measure of this study can be considered a legitimate index of employability only to the extent that an employer does what he says he will do in hiring. Then, too, before beginning to make general statements about the use of the PMT in the selection of adolescent retardates and employment, further studies are necessary using other samples in other training settings and involving other jobs. Some of these limiting points are, of course, the kind that apply to any piece of research and are not to be construed as peculiar to the one under discussion.

As Special Education Departments continue to expand their school work training programs, and as the number of potential employers who can be enlisted to cooperate in such programs approaches an asymptote, more careful screening of those to be trained will become necessary. Given this eventuality, the Porteus Maze Test might well prove a very helpful screening device. The findings of the present study give strong support

to the observations that it is relatively inexpensive as well as simple and quick to administer; and to the idea that it can be particularly useful as an initial screening instrument. The present research indicates that if only those retardates scoring above the critical score had been admitted into the training program, 85 per cent of them would have been hired (i.e., judged hirable) by their employers.

Should this high rate of initial screening be judged not high enough, however, the results for the rating scale indicate that if it is used as a supplement to the Porteus Maze Test even further successful screening would be possible. If, in the present study, only those retardates who scored <u>above</u> the critical value on <u>both</u> scales had been admitted into the training program, 100 per cent of them would have been hired (i.e., judged hirable) by their employers.

Data were not collected that would allow some kind of quantification of savings--in terms of cost, time, or efficiency of training in the program--to be derived by screening out those who would later prove to be unhirable. It seems certain, however, that an appreciable and worthwhile savings might accrue by instituting both scales as screening procedures. The Porteus Maze Test could be used to select those who will initially enter the program, and the teachers' ratings could be obtained early in the training program and used for final selection. Assuming the school and work training program involved in the present study to be a representative instance of both the

situation where there are and are not test screening procedures in use, the instance where the tests are in use would provide the greatest savings. Although approximately 30 per cent of those who would be considered hirable would be screened out by using the scales, this loss seems more than compensated for by the savings that would accrue from screening out all (100 per cent) of those who would not be considered hirable.

Porteus (1959) has argued that the Maze Test measures aspects of human functioning not covered by other psychological tests or techniques. In this connection, he has championed the use of the word "foresight" as a label for the abilities demanded by the test. Although the results of the present study do not shed any additional light on just what it is the test is measuring, they are considered to offer additional substantiation for the claim that the test is measuring some factor or factors important in real life situations. If, in addition, the term foresight were to be used in accounting for the results herein reported, it would seem to refer to planning ability at a comparatively simple level.

A drawback of the Porteus Maze Test with older subjects, for some uses, is also evident in the results of this study. There was considerable bunching of scores at the high end, resulting in a positively skewed distribution. This low-ceiling difficulty could be eliminated by adding more difficult mazes in the "Adult Range," and collecting appropriate standardization data. Positive skewing of scores also occurred with the rating

scale. Here, too, elimination of this difficulty seems possible by re-working items on the scale.

SUMMARY

The Porteus Maze Test and a Rating Scale of Personal Effectiveness were used as predictors of the employability of mentally retarded adolescents.

The Porteus Maze Test was administered to 71 mentally retarded adolescents, ranging from 16 to 19 years of age. All the Ss were attending high school in the Special Education Department of Lansing, Michigan, and working part time as employees in a special work training program. Forty of the Ss had been in the training program previous to September, 1962 and formed a critical score sample. The 31 remaining Ss had been in the program since September, 1962 and formed a replication sample.

The Rating Scale of Personal Effectiveness was filled out on each S by his teacher. Employers also filled out a rating scale for each of the Ss in their employ. On their rating sheet for a S the employers also checked an item which asked whether or not they would hire the S if a job were available. This employability item was the criterion measure.

The derived critical score on the Porteus Maze Test made overall correct prediction possible for 70 and 74 per cent of the Ss in the critical score and replication samples, respectively. In both samples the relative proportion of false

negatives was somewhat less than the relative proportion of false positives; indicating the Maze Test did better in predicting when an employer would hire a S as compared to when he would not.

Using the critical score on the rating scale it was possible to correctly determine for 85 and 90 per cent of the S, in the critical score and replication samples respectively, whether or not they would be hired. These somewhat higher overall hit rates are not significantly different from those obtained with the Porteus Maze Test.

Further examination of the data showed that better prediction was obtained for Ss scoring above than for those scoring below the critical value on either one of the scales. In addition, almost perfect prediction was obtained by using the more stringent standard of scoring above or below the critical value on both scales.

It was concluded that the Porteus Maze Test and the Rating Scale of Personal Effectiveness might profitably be used as screening devices in work training programs such as that involved here. Although data were not collected that would allow a direct computation of savings to be derived by screening out those who would later prove to be unhirable, it seems certain an appreciable and worthwhile savings would occur.

Attention was drawn to the limits of the findings. Questions were raised concerning the adequacy of the criterion measure, the nature of what the Porteus Test is measuring, and the low

score ceilings of both scales. Further studies are necessary using other criteria and samples in different training settings and jobs.

REFERENCES

Dentler, R. A. and Mackler, B. The Porteus Maze Test as a predictor of functioning abilities of retarded children. J. consult. Psychol., 1962, 26, 50-55.

Docter, R. F. and Winder, C. L. Delinquent vs. non-delinquent performance on the Porteus Qualitative Maze Test. J. consult. Psychol., 1954, 18, 71-73.

Gibbons, C. G. The indirect objective measurement of personality with particular reference to the selection of foremen. Unpub. doctoral dissertation, Ohio State University, 1943.

Guilford, J. P. The structure of intellect. Psychol. Bull., 1956, 53, 267-293.

Haggard, E. A. Socio-status and intelligence. Genet. Psychol. Monogr., 1954, 49, 141-186.

Masland, R. L., Sarason, S. B., and Gladwin, T. Mental subnormality. New York: Basic Books, 1958.

McClelland, D. C., Baldwin, A. L., Bronfenbrenner, U., and Stodtbeck, F. L. Talent and society. Princeton: Van Nostrand, 1958.

Porteus, S. D. The Maze Test and clinical psychology. Palo Alto: Pacific Books, 1959.

Siegel, S. Nonparametric statistics. New York, Toronto, London: McGraw Hill, 1956.

Small, K. Planning as a non-intellective component of intelligent behavior. Unpub. doctoral dissertation, Columbia University (New York, N. Y.), 1954.

Warren, F. G. Ratings of employed and unemployed mentally handicapped males on personality and work factors. Am. J. ment. Defic., 1961, 65, 629-633.

APPENDIX A

	FACTORS	AVERAGE EMPLOYEE		
		Less than	Same as	More than
GROUP I PERSONALITY & SOCIAL ADJUSTMENT	Self-Confidence			
	Cheerful			
	Cooperates with supervisor			
	Cooperates with other employees			
	Respects supervisor			
	Minds own business			
	Accepts criticism			
	Mixes socially with other employees			
	Neat and clean			
	(Other)			
GROUP II WORK HABITS & EFFICIENCY	On time			
	Safety conscious			
	Careful with materials and property			
	Completes work on time			
	Quality of work			
	Understands work			
	Shows initiative			
	(Other)			

WORK REPORT
Employer's Evaluation

VAT-1
Page 2

TRAINEE'S NAME.....V.A.T. JOB NO.....

	FACTORS	AVERAGE EMPLOYEE		
		Less than	Same as	More than
GROUP III GENERAL RATING	Group I--Personality and social adjustment			
	Group II--Work habits and efficiency			
	Would you be as willing to hire this individual as you would your average applicant, if a job were available?			
	YES.....PROBABLY.....PROBABLY NOT..... NO.....			

APPENDIX B

CORRELATION OF RSPE FACTORS WITH PMT

Factor	Correlation With Phi[a]
Self-Confidence	.65
Cheerful	0
Cooperates with supervisor	.33
Cooperates with other employees	.33
Respects supervisor	0
Minds own business	.65
Accepts criticism	.50
Mixes socially with other employees	.816
Neat and clean	.655
On time	.218
Safety conscious	.33
Careful with materials and property	.22
Completes work on time	.76
Quality of work	.41
Understands work	.65
Shows initiative	.76
Group I--Personality and social adjustment	.65
Group II--Work habits and efficiency	0

[a]Phi correlation coefficients were computed using 2x2 contingency tables.

APPENDIX C

LANSING PUBLIC SCHOOLS
LANSING, MICHIGAN

FORREST G. AVERILL
SUPERINTENDENT

PSYCHOLOGICAL SERVICES
MARVIN KAPLAN
DIRECTOR

Dear

We are conducting a research project in the Special Education department which we anticipate will help us to devise better methods for selecting and predicting which students in the Special Education program are most likely to be a success on the job. The ratings which you give to the particular students will in no way influence their school or job standing. Please try to rate them as objectively as possible.

The rating sheet which you have found enclosed has the name of your student on it. For each of the items please put a check mark in one of the categories opposite it. Remember, for each of the items the student is to be rated in comparison with the Average Student in the high school. Where the word "employee" appears on the rating form, substitute the word "student".

A self-addressed envelope is enclosed so that you may conveniently return the rating forms to us. The enclosed information will be of great value to us in the future.

Thanking you in advance,

Sincerely yours,

Salvatore Gambaro
School Diagnostician

Enclosure

SG:mi

APPENDIX D

LANSING PUBLIC SCHOOLS
LANSING, MICHIGAN

FORREST G. AVERILL
SUPERINTENDENT

PSYCHOLOGICAL SERVICES
MARVIN KAPLAN
DIRECTOR

Dear

We are conducting a research project in the Special Education department which we anticipate will help us to devise better methods for selecting and predicting which students in the Special Education program are most likely to be a success on the job. The ratings which you give to the particular students will in no way influence their school or job standing. Please try to rate them as objectively as possible.

The rating sheet which you have found enclosed has the name of your employee on it. For each of the items please put a check mark in one of the categories opposite it. Remember, for each of the items the Trainee is to be rated in comparison with the Average Employee on your job. If the particular Trainee is no longer employed, please rate him just the same.

A self-addressed envelope is enclosed so that you may conveniently return the rating form to us. The enclosed information will be of great value to us in the future.

Thanking you in advance,

Sincerely yours,

Salvatore Gambaro
School Diagnostician

Enclosure

SG:mi

APPENDIX E

RAW SCORE DATA FOR 08 SAMPLE

Subject	PHT score[a]	ROPE score	(Employable = 1) (Not Employable = 2)
1	74	27	2
2	132	28	1
3	110	27	2
4	114	28	1
5	102	30	2
6	96	36	2
7	122	33	2
8	106	32	2
9	118	35	1
10	118	30	2
11	106	35	1
12	78	29	2
13	73	36	1
14	122	31	2
15	118	33	1
16	118	34	1
17	118	34	1
18	114	36	1
19	82	40	1
20	110	35	1
21	129	39	1
22	129	35	1
23	135	42	1
24	126	40	1
25	129	41	1
26	129	36	1
27	126	35	1
28	132	36	1
29	118	43	1
30	126	39	1
31	126	38	1
32	126	36	1
33	129	34	1
34	132	38	1
35	129	33	1
36	122	41	1
37	126	46	1
38	74	43	1
39	122	45	1
40	118	45	1
Median =	120	35.5	

[a]Score is Test Quotient; derived by dividing the mental age achieved on the Maze Test by the subject's chronological age, using 14 years as the maximum divisor, as recommended by Porteus.

RAW SCORE DATA FOR R SAMPLE

Subject	PMT Score	RSPE Score	(Employable = 1) (Not Employable = 2)
1	86	30	2
2	78	31	2
3	58	24	2
4	132	32	2
5	122	30	1
6	110	31	2
7	126	32	2
8	62	28	2
9	82	25	2
10	106	32	2
11	106	28	1
12	126	32	1
13	129	30	2
14	118	30	2
15	58	24	2
16	114	36	1
17	114	33	1
18	126	36	1
19	114	35	1
20	118	34	1
21	126	40	1
22	70	35	1
23	110	40	1
24	86	43	1
25	114	36	1
26	114	44	1
27	122	38	1
28	122	38	1
29	132	38	1
30	129	45	1
31	114	45	1
Median =	114.25	34.75