1968

The WAIS as a Group Test of Intelligence

Robert Francis Eme
Loyola University Chicago

THE WAIS AS A GROUP TEST OF INTELLIGENCE

by

Robert Francis Eme

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts

June

1968

LIFE

Robert Francis Eme was born June 24, 1943, in Chicago, Illinois. He graduated from Quigley High School, Chicago, Illinois in June 1965, and received the Bachelor of Arts in Philosophy from St. Mary of the Lake Seminary, Chicago, Illinois, in June 1965.

After being a special student in the graduate school at Loyola University for one year, the author entered the graduate program in Clinical Psychology at Loyola University in September 1966. He has served as an assistant to Dr. Robert C. Nicolay for one year. In October 1967 he began his clerkship at the Loyola University Guidance Center and is presently working in that capacity.

ACKNOWLEDGMENTS

The author is primarily indebted and especially grateful to Dr. Ronald E. Walker for his interest in, support and encouragement of not only this research, but also his career as a graduate student. Gratitude is expressed to the introductory psychology instructors and students, without whom this research would not have been possible.

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CHAPTER 1

Introduction and Survey of Literature

The revision of the Weschler-Bellevue Scales which took place in 1955 resulted in the current edition of the Weschler Adult Intelligence Scale (WAIS). The excellence of this revision can be seen from the fact that only a few short years after it had been on the market Guertin (1959) could say "For the time being at least, the WAIS stands alone with very little competition. It can be expected to take its place as a paragon of intelligence tests. And as of this writing, it seems that the WAIS indeed has achieved a status as a paragon of intelligence tests as Guertin expected. This is indicated by the amount of research interest in the scales (577 articles in Weschler's book (1958), the fact that it has been translated into several different languages and now is used in many different countries throughout the world, and the fact that it is the instrument in clinical situations when an intellectual evaluation is needed.

The reason for this success is not hard to discover; for one has but to consult the reviewers in Buros to find out that it is because of the test's excellent construction and the representativeness of its norms that it has won the favor of the clinician.

Despite the fact that the WAIS was initially designed as a clinical instrument and has made its reputation in this area, this has been by no means the only way in which it has been used. In fact if one may judge from the 197 articles contained in Guretin's (1966) review, the WAIS is becoming almost as popular as a

research instrument as it is as a clinical instrument. Hence for the same reasons as given above, Guertin reports that "work with Weschler's scales goes on unabated." And this research in which the WAIS is involved seems to be as diverse as the research interests of the psychologist himself, as indicated by the following studies.

The WAIS has been used to investigate intelligence as a function of age in several longitudinal and cross-sectional studies. Bradway and Thompson (1962) investigated the mental growth rate of normals, Bell and Zabek (1960) the mental growth rate of defectives, and Eisdorfer (1963) the deterioration of the I.Q. of Ss between the ages of 60 and 70. Hulicka (1962) employed the WAIS in a cross-sectional design on Ss with a mean age of 69 in relating change in I.Q. to ability level.

The WAIS has been used in the study of mental defectives. Silverstein (1962) studies the correlation between the WAIS and length of hospitalization. Tarjan et al. (1960) found the release rate of male and female mental defectives to be a function of full scale I.Q.

The WAIS has been used in the study of ego function. For example, Devereaux Foundation has used the WAIS in its continued studies of I.Q. and ego delay functions. Pertinent to this research are the studies reviewed by Levine, Spivak, and Wright (1959) in which the Rorschach M was correlated with WAIS I.Q. scores.

Psychotherapy research has made use of the WAIS as indicated

in a study by Hanover (1965) in which a correlation was found between I.Q. and success or duration in therapy.

Researchers have used the WAIS in many studies relating numerous variables to the performance of schizophrenics. Illustrative of the research in this area is a study by De Luca (1964) in which he related an examiner established "set to improve" with poor pre-morbid performance on the WAIS. He found that they improved or declined as a function of the set, regardless of the intervening positive or negative evaluation.

Finally Gilgash (1961) used the WAIS to study the effects of thorazine on the I.Q. catatonic schizophrenics.

In all the above research studies the WAIS was used as an individual test, but the possibility exists for its use as a group test. This idea suggests itself from the fact that the WAIS itself has been frequently used as a criterion of validity for many of the most widely used group tests of intelligence as the following review indicates.

Wiens and Banaka (1960) conducted a study to investigate the comparability of the Shipley-Hartford (S-H) scores and the WAIS full scale I.Q. They concluded that the S-H can be profitably used in hospital settings as a substitute for the WAIS where economy of administration is desired.

Suinn (1960) and Wahler and Watson (1962) have both conducted studies the purpose of which was to investigate the validity of the S-H as a screening device, since efficient work in institutions with large patient populations requires the availability of

tests which can be briefly administered and interpreted. Correlation with the WAIS was taken as the measure of the S-H's validity for this function. Their conclusions were that when I.Q. is a minor variable in a decision complex and only a broad categorization is required for the circumstances, the findings support the position that the S-H can be sufficient.

Stone and Ramer (1965) state that although the S-H appears to be valuable as an economical substitute for the WAIS when only an I.Q. estimate is required, the reason for their study was to investigate the relationship between the S-H and the WAIS under more typical clinical conditions than the above studies. Their study involved using a WAIS I.Q. based on 6 or more subtests rather than requiring administration of all eleven, and the administration of S-H and WAIS tests by 10 different psychologists. They reported a correlation of .79 between the S-H and several WAIS subtests and hence confirmed the findings of previous studies.

Darbes (1960) conducted a study in which the WAIS was used as a criterion measure for the Otis. He reports correlations ranging from .75 to .87 for the two tests.

Warren and Collier (1960) were interested in the use of the Columbia Mental Maturity Scale as a screening device for retardates, using WAIS scores as the criterion for retardation. They report correlations ranging from .68 to .70 between the two tests.

Jurjevich (1963) states that psychologists working in institutions are often faced with the problems of classification and

evaluation of intellectual capacity for persons in groups too large for individual evaluation. Group tests are often being used for large numbers of institutionalized subjects; and this procedure is often accompanied by a considerable discomfort to the psychologist who has to recommend some important decision on the basis of instruments suspected to have a low validity for the group in question. His study represented an attempt to investigate the applicability of the Henmon-Nelson to specific kind of institutionalized subject, the delinquent girl. The suitability of the Henmon-Nelson as a group test of intelligence for this institutionalized group was ascertained by establishing its concurrent validity with the WAIS. The author reports correlations ranging from .69 to .93 for the two tests.

The Ravens Progressive Matrices Test has also used correlation with the WAIS as a criterion of its validity. McLeod and Rabin (1962) report that correlations with the WAIS range from .58 to .67 with a group of neurotics. Orme (1961) conducted a study using the colored Raven's and found correlations ranging from .75 to .98 with a retarded group.

With respect to the California Test of Mental Maturities, the manual cites five criteria of its validity. One of the criteria employed is correlations with other intelligence tests including the WAIS. Freeman (1959) reports that on the whole coefficients resulting from these validating studies, which were carried out by investigators other than the authors of the test, are satisfactory or even high, especially in the case of the WAIS.

In his review of the literature on the WAIS, Guertin (1966) sums up the situation by saying that the fact that the WAIS is so frequently used as a criterion measure for group tests of intelligence testifies to the validity generally assumed to characterize it. The idea of using the WAIS itself as a group test of intelligence, would seem to be especially valuable for several reasons.

First, it would seem obvious from the above review that a group WAIS would be a more valid and reliable test than the above tests since it is the standard itself which is being employed rather than the tests which are based on the standard, and since, as Jurjevich (1963) so well observed, many of the tests now employed are of suspect validity.

Second it seems that the norms of the WAIS are superior to those of the other tests, and hence a person's score could be more meaningfully interpreted. Support for this reason comes from the various reviewers of the above tests.

Concerning the norms for the WAIS, Guertin (1966) in his review succinctly sums up his evaluation of their adequacy by reporting that "...one is encouraged to accept these new norms quite unconditionally for a clinical population." Hence it appears that a good deal of confidence can be placed in the representiveness of the WAIS's norms. However the picture is far less sanguine for many of the other widely used group intelligence tests, as the following reviewers report.

In evaluating the norms for the Shipley-Hartford, Ives (1949) reports that since the standardization is on 1046 individuals, all

students from the 4th grade up thru college, one finds that the test sets norms which are higher than an unselected sample as found in the hospitals where the S-H is used.

She goes on to state that because the S-H is not considered valid for those with a Shipley vocabulary age below 14 years, this excludes not only feebleminded and borderline individuals, but the entire lower half of the population as measured by the Binet or Bellevue. Also the standardization group includes no older people and therefore no allowance is made for normal retrogression, which is important in any patient population.

In reviewing the Otis Group Intelligence scale, Lefever (1965) states that a comparison between the 1920 and 1938 norms showed that the original norms were too low by more than 50 per cent at the 6 and 7 year age levels. The difference between the 1920 and 1938 norms diminishes to less than 2 per cent at the 12 year age level. And he goes on to say in view of this shift between 1920 and 1938 norms and since the 1938 norms are the latest reported, one wonders whether any additional shift in norm values would be shown if more recent surveys were conducted. In short, he states that by today's standards the information furnished by the consumer of the Otis is both antiquated and inadequate.

In his review of the Columbia Mental Maturity Scale, Hiskey (1965) states the present revision of the original scale (1954) took place after reports of research gave highly conflicting evidence as regard to validity and reliability coefficients, adequacy of norms, item difficulty, and the rationale for response.

However as Newland (1965) pointed out there is an absence of any direct evidence for the reliability of the revision; and hence one wonders to what extent the revision has corrected the above criticism.

Concerning the norms per se, the reader is advised in the manual itself that the procedures utilized to standardize the test will tend to perpetuate, in the Columbia's norms, any systematic errors present in the norms for the other tests. The reason for this advisement is that the publishers forthrightly admit that they assumed the comparability of the group tests used in the standardization and hence there is the resulting possibility of the Columbia's norms reflecting or perpetuating any systematic errors present in the norms of these group tests. Newland (1965) also adds the caution that the critical user of this test will be aware of the possibility that the East Coast norms of the Columbia may not be generally applicable.

In short Hiskey (1965) states that the norms used to interpret the performance on the Columbia should be utilized with caution, especially at the extremes.

Concerning the Henmen-Nelson at the college level; i.e., at the level in which it is comparable to a group intelligence test for adults, Crites (1965) reports that the nature of the national normative data restricts the applicability of the test to college freshmen. However at the lower level grades 3-12 reviewers such as Lefever (1959), Tyler (1959), and Shaffer (1959) are unanimous in their praise of the norms.

The adequacy of the norms for the Ravens P-M is concisely summed up by Cronbach (1960) when he reports that the inability to compare a case with an acceptable American norm is a serious drawback to the use of the test.

As regards the California Test for Mental Maturity, Freeman (1959) reports that the standardization population appears to be quite satisfactory as to numbers, geographical distribution, and stratification. Hence this is the only test of those reviewed which used the WAIS as a criterion measure and had satisfactory norms.

Concerning the other important group tests of intelligence which do not use the WAIS as a criterion measure, the reviewers have the following comments on their standardization.

Anastasi (1961) makes the following critical evaluation of the norms for the Primary Mental Abilities Test. She reports that the normative samples, while generally satisfactory as to size, are inadequately described with reference to socio-economic level, geographical distribution, proportion of urban and rural subjects, national and ethnic origin, and other relevant characteristics. It seems likely, she says, that the samples employed are quite restricted and unrepresentative of the country at large in one or more of these categories. More information regarding these normative samples is needed in order to determine just what population is sampled. Yet the norms are offered for general use without qualification. Another shortcoming which she reports is the lack of separate sex norms or any discussion of sex differences.

Concerning the Kuhlman-Anderson, Pidgeon (1965) reports that unlike achievement tests, nationally representative norms are of paramount importance for intelligence tests. He goes on to say that though this certainly appears to be the view held by the test authors, the steps taken to insure a representative sample fall short of ideal.

Hoyt (1959) reviewed the Ohio State Psychological Examination which runs from grade 9 thru college. At the college level, the level which would be comparable to a group test of intelligence for adults, he reports that the norms are tentative.

As regards the Differential Aptitude Battery (DAT), Keats (1965) reports that an overall standardization sample of more than 50,000 seems very substantial indeed, but when it is divided by grade, sex, and time for testing, it is found that each set of norms is based on little more than 2000 cases. He adds that even these samples are quite adequate and probably larger than those used by most agencies.

Thus it is apparent that with the exception of the California Test of Mental Maturities and the Differential Aptitude Battery, the adequacy of the norms for the most widely used group tests of intelligence is such that one must entertain serious reservations about the meaningfulness with which a person's score on these tests can be interpreted. In addition to the above mentioned reasons for the value of a group WAIS there is in addition the fact that the norms for a group WAIS would be superior even to tests such as the California Test of Mental Maturities and the

Differential Aptitude Battery since its norms are adequate upwards to age 70 while those of the CTMM and the DAT stop at age 17; and it is only by the dubious process of extrapolation that they are extended beyond that level.

Also with the exception of factor analytic batteries such as the DAT and the PMA group test of intelligence do not give a picture of the various aspects a group WAIS would give of I.Q. in this respect it would seem to be superior to the other group tests which do not purport to silhouette the various facets of I.Q.

Finally, as the above-reviewed studies of Wiens and Banaka (1960), Suinn (1960), Wahler and Watson (1962), Stone and Ramer (1965), Warren and Collier (1960), and Jurjevich (1963) indicated, there is a real clinical need for a test which can be used as a screening device. Since a group WAIS to be proposed in this thesis could be administered in a far shorter time (approximately a half hour) than most existing group tests of intelligence, it would seem to admirably fulfill this need.

Hence it would seem that for the above reasons, a group WAIS would not be merely a superfluous addition to an array of already existing group tests of general intelligence, but would constitute a valuable psychological instrument. For it would enable the psychologist to arrive at a more valid and more meaningful appraisal of intelligence, in a much shorter time and for a much broader population than he is presently able to with existing group tests of intelligence.

Once having shown the value of a group WAIS its feasibility is demonstrated by studies such as those of Doppelt (1956) and Maxwell (1957) whereby a judicious selection of subtests were shown to yield an extremely high correlation with the full scale I.Q., to the extent that the correlations were nearly equivalent to the WAIS's test-retest reliability. Thus a valid, reliable I.Q. can be obtained in only a fraction of the usual time through the administration of only a few of the subtests. Also, because the correlations between the subtests are known, what an individual would have scored on the other subtests can be easily obtained; and therefore, despite the brevity of the test, a picture of the various aspects of a person's I.Q. comparable to that given by the full scale WAIS can also be attained. And finally the feasibility of adapting an individual I.Q. test for group administration has been demonstrated in a study by Fargo, Crowell, Noyes, Fuchigami, Gordon, and Dunn-Rankin (1967). Their study was conducted to examine the feasibility of adapting the Peabody Picture Vocabulary Test for group administration by means of educational television. The results indicated that the scores of individual and group administration were comparable and hence that the Peabody thru economical group administration could be used as a screening device.

In short, it seems entirely feasible that by means of a group WAIS a valid reliable estimate of an individual's I.Q. could be arrived at in half of the usual testing time without sacrificing any of the differential aspects of I.Q. assumed to be

gotten thru a full scale administration of the WAIS.

Thus this study is conducted with the purpose of examining the feasibility of adapting the WAIS for group administration. The objective is to test the hypothesis that scores obtained in group administration would not significantly differ from those obtained in individual administration. The investigator believes that if the two administrations are found comparable, the economical group administration could serve as a valuable substitute for intelligence tests which are not being employed in many clinical situations; and its implications as a screening device for both clinical and non-clinical situations are manifold.

CHAPTER II

Procedure

Subjects

The Ss employed were 100 undergraduate college students who were drawn from three different colleges located in Chicago, Illinois; namely, Rosary, St. Mary of the Lake, and Loyola. All 100 received the group test in groups ranging in size from 5 to 30, while 60 (30 male, 30 female) took the individual test in addition to the group test. All the subjects involved were volunteers who were asked to participate in an experiment in order to help a graduate student in psychology gather data for his Master's thesis. They were told that the experiment would involve taking subtests from an I.Q. test and would require about 1 hour of their time.

Subjects from Loyola were gotten in two ways. An appeal was made for volunteers in two summer school psychology courses at Loyola and also one of Loyola's secretaries enlisted the participation of her friends, all of who were part-time college undergraduates.

Subjects from Rosary and St. Mary of the Lake were gotten thru the aid of E's friends who contacted fellow students and asked them to volunteer.

Apparatus

The materials employed for the group administration of the WAIS were the subtests of Information (I), Similarities (S), Picture Completion (PC), and Digit Symbol (DS). These were chosen

because of their suitability for group administration and because of their high correlation with the full scale I.Q. as indicated by Maxwell (1957).

Individual answer sheets were provided for the Ss. The answer sheets for I, S, and PC consisted in a single sheet for each subtest in which the number of each question was listed followed by a space for answering. The answer sheets were titled, TEST I, TEST II, TEST III, respectively. The answer sheet for DS was titled IV and consisted of a mimeographed copy of the test itself. The reason for using individual answer sheets which were so titled instead of simply using Weschler forms was to adhere to the test standardization as closely as possible. Since in an individual administration the testee does not employ the Weschler form nor does he know the title of the subtest which he is taking, it was felt that those same conditions should prevail in a group administration.

An overhead projector and a screen were used whereby the examples called for in the instructions on the DS were illustrated and also whereby the pictures of the PC were projected for viewing.

For the individual administration the subtest of Vocabulary, Arithmetic, Block Design, and Picture Arrangement were employed because of their high correlation with the full scale I.Q. as shown by Maxwell (1957).

Four subtests, two verbal and two performance were employed in each condition for as Maxwell demonstrated, the accuracy of

the abbreviated scales is a function of the number of subtests included and that while verbal scales are generally better predictors than performance scales, a combination of both verbal and performance subtests is best.

Digit Span and Object Assembly were eliminated from the test battery because, as the Weschler manual indicates, their correlations with the full scale I.Q. are the lowest of all the subtests.

Comprehension was not included for two reasons. First, factor analytic studies such as the one by Cohen (1956) have demonstrated that the factorial composition of Comprehension doesn't include anything different from that of Information or Vocabulary. Hence it would seem that the importance of its inclusion in the test battery would be minimal. Second, studies such as those by Walker (1965) have shown that his scoring of Comprehension items contains a high degree of difficulty and unreliability. Hence it would appear that the scoring of the subtests of Vocabulary and Information would be easier. Thus the fact that Comprehension didn't seem to add anything to the test battery coupled with the difficulty involved in its scoring militated against its inclusion in the present study.

Procedure

A counter-balanced treatment design was utilized. Half of the Ss, 15 male and 15 female, had the individual presentation prior to the group presentation and half had the group session first.

In the individual administration, the standardized procedure given by Weschler was followed and they were instructed not to

tell the other Ss about the test.

In the group administration the following instructions were given.

> My name is Robert Eme and I am a graduate student in psychology at Loyola presently working for my M.A. Today I would like to take about thirty minutes of your time to gather some data for work on my Master's Thesis. I am going to administer to you a group intelligence test which is closely related to a widely used individual I.Q. test. The purpose of the administration is to relate group performance on the test to individual performance on the test. The first thing I would like to have you do is to sign your name at the top of the answer sheets. You will also notice that your answer sheets are number Test, 1,2,3,4. During the test I would ask you to refrain from asking any questions or making any comments about the test and to pay close attention to the instructions. You aren't expected to know all the questions and those you don't know, skip and go on to the next number. The questions for the first test are as follows: cf. Weschler, Question one is .....etc.

The instructions used for each of the four tests were the same as those used in the individual administration except for the following modifications. On the DS, the three examples called for in the instructions were illustrated via projection on the movie screen rather than writing them out for the individual, as is usually done. The Ss were then instructed to complete the four remaining sample questions themselves. On the PC after the third question was given the following statement was made, by way of a reminder.

> Remember to pick out the most significant thing missing.

Weschler states that such a reminder should be given only

once and only when the S picks an unimportant missing part. Since in the group situation it would be impossible to know when an S picks an unimportant part for the first time, it was felt that such a reminder was advisable in order to give the Ss in the group test a situation more comparable to the one they would experience in the individual situation.

Total administration time took one half hour.

The stimuli for tests one and two were read while those for three and four were presented via the projector. On tests one and two, proceeding to the next item was based on two criteria. One was an interval of approximately 20 to 30 seconds, which was chosen on the basis of E's experience with the test. The second was observation by E of the progress being made by the Ss.

CHAPTER III

Results

Tables one to six contain the Pearson r correlations for the two administrations. These correlations have been corrected for range restriction due to the homogeneity of the subjects employed since they were all college undergraduates. (cf. McNemar, 1962.) The correlations in parentheses are those prior to the correction.

The mean and standard deviations of the intelligence test scores for the two administrations are contained in tables seven to twelve. These scores were calculated thru an extrapolation of the two verbal and two performance subtests employed in each administration to the full scale verbal and full scale performance I.Q.

The mean and standard deviation of the scaled scores of the individual subtests employed in both administrations are contained in tables thirteen to eighteen.

Tables nineteen and twenty contain the simple linear regression predictions for the 60 Ss who received both administrations of the WAIS. The regression for each S was computed using the full scale group I.Q. as the predictor and the full scale individual I.Q. as the criterion.

The regression coefficients and the standard error of the estimate for the predictions are contained in table twenty-one.

Table twenty-two contains the evaluation of the significance of the difference between the mean group I.Q. and mean individual

I.Q. for males and females. The t test for correlated means was employed to evaluate the significance.

Table twenty-three contains the evaluation of the significance of the difference between the mean predicted I.Q. and the mean of the criterion of the I.Q. against which the prediction was made. The t test for correlated mean was employed to evaluate the significance.

Table twenty-four contains the evaluation of the significance of the difference between the variability of group verbal performance and total I.Q. with their counterparts in the individual administration. The t test for correlated variances was employed to evaluate the significance.

TABLE 1

MEASURES FOR INTERCORRELATION OF I.Q. FOR 30 MALES

	Group Verbal	Group Performance	Group Total	Individual Verbal	Individual Performance
Group P.	.32(.18)a*				
Group T.	.93(.80)**	.79(.77)**			
Individual V.	.78(.56)**	.11(.11)	.84(.40)**		
Individual P.	.32(.23)*	.14(.13)	.66(.23)**	.83(.61)**	
Individual T.	.53(.39)**	.15(.14)	.80(.35)**	.99(.88)**	.91(.91)**

a The correlations in parentheses are those prior to the correction for range restriction. The significance values refer to the correlations corrected for range restriction. (cf. McNemar, 1959, p 241.)

* $p < .05$

** $p < .01$

TABLE 2

MEASURES FOR INTERCORRELATION OF I.Q. FOR 30 FEMALES

	Group Verbal	Group Performance	Group Total	Individual Verbal	Individual Performance
Group P.	-.11(-.08)				
Group T.	.82(.75)**	.63(.55)**			
Individual V.	.88(.77)**	-.03(-.03)	.94(.59)**		
Individual P.	.52(.38)**	.46(.35)**	.91(.51)**	.31(.24)*	
Individual T.	.86(.74)**	.22(.19)	.96(.70)**	.82(.73)**	.82(.82)**

* p $<$ .05

** p $<$ .01

TABLE 3

MEASURES FOR INTERCORRELATION OF I.Q. FOR 30 MALES and 30 FEMALES

	Group Verbal	Group Performance	Group Total	Individual Verbal	Individual Performance
Group P.	.10(.05)				
Group T.	.89(.78)**	.71(.67)**			
Individual V.	.83(.65)**	.04(.04)	.89(.50)**		
Individual P.	.47(.31)**	.30(.20)**	.79(.37)**	.57(.42)**	
Individual T.	.70(.58)**	.18(.16)	.88(.53)**	.91(.81)**	.87(.87)**

* $p < .05$

** $p < .01$

TABLE 4

MEASURES FOR INTERCORRELATION OF I.Q. for 50 MALES

	Group Verbal	Group Performance
Group Performance	.26(.16)*	
Group Total	.88(.73)**	.78(.78)**

* p $<$ .05

** p $<$ .01

TABLE 5

MEASURES FOR INTERCORRELATION OF I.Q. for 50 FEMALES

	Group Verbal	Group Performance
Group Performance	.13(.08)	
Group Total	.93(.82)**	.73(.63)**

** p ◄.01

TABLE 6

MEASURES FOR INTERCORRELATION OF I.Q. for 50 MALES and 50 FEMALES

	Group Verbal	Group Performance
Group Performance	.20(.12)*	
Group Total	.91(.78)**	.76(.71)**

* p $<$ .05

** p $<$ .01

TABLE 7

MEAN AND STANDARD DEVIATION OF I.Q. SCORES for 30 MALES

	Mean	Standard Deviation
Group V.	121.93	8.33
Group P.	115.40	10.73
Group T.	120.03	7.50
Individual V.	119.76	8.50
Individual P.	110.93	12.26
Individual T.	117.00	9.73

TABLE 8

MEAN AND STANDARD DEVIATION OF I.Q. SCORES for 30 FEMALES

	Mean	Standard Deviation
Group V.	121.50	10.03
Group P.	116.46	9.93
Group T.	120.70	7.63
Individual V.	119.26	8.96
Individual P.	110.50	12.70
Individual T.	116.23	9.23

TABLE 9

MEAN AND STANDARD DEVIATION OF I.Q.SCORES for 30 MALES & 30 FEMALES

	Mean	Standard Deviation
Group V.	121.71	9.13
Group P.	115.93	9.18
Group T.	120.50	7.56
Individual V.	119.51	8.73
Individual P.	110.71	12.48
Individual T.	116.61	9.48

TABLE 10

MEAN AND STANDARD DEVIATION OF I.Q.SCORES for 50 MALES

	Mean	Standard Deviation
Group V.	122.10	9.06
Group P.	115.24	11.66
Group T.	120.14	7.96

TABLE 11

MEAN AND STANDARD DEVIATION OF I.Q. SCORES for 50 FEMALES

	Mean	Standard Deviation
Group V.	119.56	8.86
Group P.	116.34	9.28
Group T.	119.42	7.18

TABLE 12

MEAN AND STANDARD DEVIATION OF I.Q.SCORES for 50 MALES & 50 FEMALES

	Mean	Standard Deviation
Group V.	120.83	9.46
Group P.	115.79	10.47
Group T.	119.78	7.57

TABLE 13

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 30 FEMALES

	Mean	Standard Deviation
Vocabulary *	13.46	1.60
Arithmetic	11.93	1.95
Block Design	11.33	3.00
Picture Arrangement	11.56	2.47
Information	13.46	1.92
Similarities	13.03	2.00
Picture Completion	11.76	1.69
Digit Symbol	13.00	2.43

* Vocabulary, Arithmetic, Block Design, and Picture Arrangement were in the GROUP condition with Information, Similarities, Picture Completion, and Digit Symbol in the INDIVIDUAL administration.

TABLE 14

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 30 MALES

	Mean	Standard Deviation
Vocabulary	13.83	1.42
Arithmetic	12.36	2.29
Block Design	11.83	2.57
Picture Arrangement	11.26	1.93
Information	14.50	1.77
Similarities	12.33	1.90
Picture Completion	11.93	2.00
Digit Symbol	12.66	2.68

TABLE 15

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 30 MALES & 30 FEMALES

	Mean	Standard Deviation
Vocabulary	13.64	1.51
Arithmetic	12.14	2.12
Block Design	11.58	2.78
Picture Arrangement	11.41	2.20
Information	13.98	1.84
Similarities	12.68	1.95
Picture Completion	11.84	1.84
Digit Symbol	12.83	2.55

TABLE 16

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 50 MALES

	Mean	Standard Deviation
Information	14.68	1.70
Similarities	12.88	1.00
Picture Completion	12.14	1.00
Digit Symbol	13.12	2.18

TABLE 17

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 50 FEMALES

	Mean	Standard Deviation
Information	13.22	2.00
Similarities	12.82	1.85
Picture Completion	11.76	1.81
Digit Symbol	13.00	2.14

TABLE 18

MEAN AND STANDARD DEVIATION OF SCALED SCORE for 50 MALES and 50 FEMALES

	Mean	Standard Deviation
Information	13.95	1.85
Similarities	12.85	1.42
Picture Completion	11.95	1.40
Digit Symbol	13.06	2.16

TABLE 19

PREDICTION OF INDIVIDUAL I.Q. FROM GROUP I.Q.-30 MALES

	Group I.Q.	Predicted Individual I.Q.	Actual Individual I.Q.
1	113	110	114
2	118	115	104
3	107	103	122
4	114	111	92
5	119	116	116
6	114	111	119
7	106	102	103
8	109	105	114
9	119	116	123
10	128	125	122
11	118	115	106
12	128	125	128
13	131	128	132
14	116	113	110
15	112	108	115
16	127	124	111
17	134	131	111
18	126	123	125
19	123	120	129
20	120	117	109
21	132	129	129
22	126	123	130
23	119	116	119
24	119	116	129
25	133	130	104
26	119	116	114
27	117	114	118
28	124	122	132
29	112	108	115
30	127	124	115

TABLE 20

PREDICTION OF INDIVIDUAL I.Q. FROM GROUP I.Q. - 30 FEMALES

	Group I.Q.	Predicted Individual I.Q.	Actual Individual I.Q.
1	112	106	118
2	126	122	119
3	121	116	114
4	110	104	120
5	122	118	118
6	119	114	110
7	126	122	120
8	116	111	120
9	131	128	112
10	116	110	120
11	113	107	106
12	121	116	115
13	108	101	96
14	120	115	110
15	119	114	115
16	127	123	122
17	127	123	120
18	123	119	119
19	126	122	125
20	105	98	99
21	119	114	120
22	126	122	131
23	138	136	141
24	117	112	110
25	123	119	129
26	125	121	112
27	133	130	126
28	113	107	113
29	114	108	103
30	125	121	118

TABLE 21

REGRESSION EQUATIONS

	Regression Equation	Standard Error of Estimate
Male	1.04 (-8)	5.89
Female	1.16 (-24)	1.58

TABLE 22

DIFFERENCE IN MEAN I.Q. SCORES

	30 MALE		30 FEMALE	
	Group I.Q.	Individual I.Q.	Group I.Q.	Individual I.Q.
M	120.03	117.00	120.70	116.23
SD	7.50	9.73	7.63	9.23
t[a]	.52		1.65	

[a] df = 28
p < .05

TABLE 23

DIFFERENCE IN MEAN I.Q. SCORES

	30 MALE		30 FEMALE	
	Predicted I.Q.	Actual I.Q.	Predicted I.Q.	Actual I.Q.
M	117.23	117.00	116.23	115.63
SD	8.13	9.73	9.10	9.23
t[a]	.55		.23	

a df = 28
p < .10

TABLE 24

DIFFERENCE IN CORRELATED VARIANCE

30 MALES and 30 FEMALES

	STANDARD DEVIATION
Group Verbal	9.13
Individual Verbal	8.73
t = .47*	
Group Performance	9.18
Individual Performance	12.48
t = 1.73**	
Group Total	7.56
Individual Total	9.48
t = 2.54***	

df = 28

*p <.01
**p <.05
***p <.05

CHAPTER IV

Discussion

The results showed the corrected correlation between group and individual total I.Q. for males and females to be high, yielding correlations of .80 and .96 respectively. When male and female Ss were combined, the resulting corrected correlation between individual and group total I.Q. was equally high, being .88. Hence the high correlations suggest the apparent comparability in scores obtained under the two types of test administration.

This comparability is further supported by the results of the t tests which showed that there was no significant difference between the individual and group mean total I.Q.'s for both males and females.

This comparability receives still further support from the accuracy of the predictions made on the basis of the group administration in which the t tests showed that there was no significant difference between the mean predicted I.Q. and the mean actual I.Q. for both males and females.

In sum the apparent comparability of scores obtained under the two types of test administration point to the feasibility of the use of the WAIS as a group test of intelligence.

For the most part the results corresponded to what would be expected on the basis of Weschler's norms and the characteristics of the sample itself. Verbal I.Q. exceeded Performance I.Q. in

both administrations and for both sexes. The sex differences followed the usual patterning with the males proving superior to the females on the subtests of Arithmetic, Block Design, Information, and Picture Completion and the females proving superior on the subtests of Picture Arrangement, Similarities, and Digit Symbol. The one discrepancy was on the subtest of Vocabulary in which the males unexpectedly proved superior to the females. The reason for this may be that whereas all the male Ss were full time college undergraduates, close to 1/4 of the female Ss were only part-time college undergraduates. Hence it might be expected that the males would perform better on Vocabulary than the females since this subtest in comparison to the other subtests employed would be more sensitive to the superior verbal skills a full time student might be expected to have as compared with a part-time student. This was borne out by checking the mean vocabulary score for the part-time students; and it was found to be a full scaled score point below that of the mean for the full-time female S in the sample.

The above average I.Q. of the Ss which ran roughly to a little over one standard deviation from the mean corresponds to what would be expected from a college population. Also the decreased variability found in the scores is to be expected in view of the homogeneity of the Ss who comprised the sample.

The intercorrelation among the tests is also congruent with what would be expected in view of Weschler's norms except for the Group Performance scores whose correlation were consistently lower

than what would be expected.

The above findings have implications more for the use of the group WAIS as a research tool rather than a clinical tool because a group WAIS would involve the loss of qualitative observation and the discrepancies in individual subtest performance, its value as a clinical tool would be minimal unless all the clinician wanted was a simple I.Q. Then used in this way or as a screening device, it would seem that a group WAIS would be superior to many of the tests now employed in these functions because of the quickness with which it can be administered (the group administration in the present study took 1/2 hour), the age ranges it covers, and its superior validity and reliability.

Its chief value however would be as a research tool for the studying of intelligence per se or as one of a host of variables. For the results of this study suggest that the researcher can place as high a confidence and surety in a group WAIS as he presently does in an individually administered WAIS. Hence a researcher interested in studying I.Q. as a variable or merely wishing to equate groups in terms of this variable is enabled to do so in a shorter time, than he normally would. He is also able to study a much broader population with much more confidence than he normally would have because of the excellence of the WAIS's norms. And finally he can be assured that the I.Q. he derives from the use of the group WAIS is a valid one. For these reasons it would seem that a group WAIS would be an excellent instrument to be added to the researcher's armamentarium.

CHAPTER V

Summary

One hundred Ss, fifty male and fifty female were tested by the same E on a group WAIS -- I, S, PC, DS -- and sixty of these one hundred Ss, thirty male and thirty female, were tested by the same E on an individual WAIS -- V, A, BD, and PA. It was hypothesized that the scores obtained in the group administration would be comparable to those obtained in an individual administration.

The hypothesis was supported and implications for the use of a group WAIS as a research instrument were discussed.

BIBLIOGRAPHY

Anastasi, Anne, Psychological Testing, N.Y.: Mac illan, 1954, P.348.

Bell, A., and Zubek, J. The effect of age on the intellectual performance of mental defectives. Journal of Gerontology, 1960, 15, 285-295.

Bradway, K.P., and Thompson, C.W. Intelligence at adulthood, A twenty year follow-up. Journal of Educational Psychology, 1962, 53, 1-14.

Crites, J., Cited in Buros, O.K. The Sixth Mental Measurements Yearbook, The Gryphon Press, Highland Park, N.J., 1965, P.462.

Cronbach, Lee J. Essentials of Psychological Testing, N.Y., Harper, 1960, p.217.

Darbes, A. Relationships among college student scores on ACE, Otis and WAIS tests, Proceedings of the West Virginia Academy of Science, 1960, 32, 214-216.

De Luca, J.N. Cognitive task performance in schizophrenia as a function of pre-morbid history, evaluation, and set to improve. Dissertation Abstracts, 1964, 24, 3834-3835. (Abstract)

Doppelt, J. Estimating the Full Scale score on the Weschler Bellevue Adult Intelligence Scale from scores on 4 subtests. J. consult. Psychol., 1956, 20, 63-66.

Esidorfer, C. the WAIS performance of the aged: A retest evaluation. Journal of Gerontology, 1963, 18, 169-172.

Fargo, G., Crowell D., Noyes, M., Fuchigami, R., Gordon, J., Dunn-Rankin, P., Comparability of group television and individual Administration of the Peabody Picture Vocabulary Test, Journal of Education Psychology, 1967, 58, pp. 137-140.

Freeman, Frank J.: Cited in Buros, O.K. The Fifth Mental Measurements Yearbook. The Gryphon Press, Highland Park, N. J., 1959, P. 314.

Gilgash, C. A. Thorazine therapy with catatonic schizophrenics in relation to Weschler Verbal and Performance subtest comparison. Journal of Clinical Psychology, 1961, 17, 95.

Guertin, W. H.: Cited in Buros, O.K. The Fifth Mental Measurements Yearbook. The Gryphon Press, Highland Park, 1959, P.415.

Guertin, Wilson H., Ladd, Clayton E., Frank, George H., Rabin, Albert I., Heister, Douglas, S., Research with the Weschler Intelligence Scale for Adults: 1960-1965, Psych. Bull., 66, pp. 385-409.

Hall, Julian C., Correlation of a modified form of Raven's Progressive Matrices (1938) with the WAIS J. consult. Psychol., 1957, 21, pp. 232-236.

Harrower, N. Psychodiagnostic testing: An Empirical approach., Springfield, Ill.: Charles C. Thomas, 1965.

Hiskey, Marshall,: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook. The Gryphon Press, Highland Park, N.J. 1965, p. 517.

Hoyt, Cyril J.: Cited in Buros, O.K. The Fifth Mental Measurements Yearbook, The Gryphon Press, Highland Park N.J., 1959, p.359.

Hulicka, I.A. Verbal WAIS scores of elderly patients, Psychological Reports, 1962, 10, p.250.

Ives, Margaret,: Cited in Buros, O.K. The Third Mental Measurements Yearbook, Rutgers University Press, New Brunswick, N.L., 1949, p. 95.

Jurjevich, R., An evaluation of the Henmon-Nelson group I.Q. test with delinquent girls. Journal of General Psychology, 1963, 69, pp. 227-233.

Keats, J.: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook, The Gryphon Press, Highland Park, N.J., 1965, p.767.

Lefever, Welty, D.: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook, The Gryphon Press, Highland Park, N.J.,1965,P.480.

Levine, M., Spivak, G., and Wright, B. The inhibition process, Rorschach human movement responses, and intelligence. Some further data. Journal of Consulting Psychology, 1959, 23, pp. 306-312.

Maxwell, E. Validities of abbreviated WAIS scales. J. consulting Psychol. 1957, 21, pp.121-126.

McLeod, H.N., Rabin, J. Correlation between Ravens Progressive Matrices and the WAIS. Journal of consult. Psychol., 1962, 26, pp. 190-191.

Newland, T.: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook. The Gryphon Press, N.J., 1965, p. 517.

Orne, J.E. The colored Progressive Matrices as a measure of intellectual subnormality. British Journal of Medical Psychology. 1961, 34, pp. 291-297.

Pidgeon, Douglas A.: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook. The Gryphon Press, Highland Park, N.J., 1965, p.466.

Shaffer, R.: Cited in Buros, O.K. The Fifth Mental Measurements Yearbook, The Gryphon Press, Highland Park, N.J., 1959, P.343.

Silverstein, A.B. Length of hospitalization and intelligence test performance in mentally retarded adults. American Journal of Mental Deficiency, 1962, 66, pp.618-620.

Stone, L.A., Ramer, J.C. Estimating WAIS I.W. from Shipley Scale score: Another cross-validation. Journal of Clinical Psychology, 1965, 21, p.297.

Suinn, R.M. The Shipley-Hartford Retreat Scale as a screening test of intelligence. Journal of Clinical Psychology, 1960, 16, p.419.

Tarjan, G., Dingman, H.F., Eyman, R.K., and Brown, S.J. Effectiveness of hospital release program. American Journal of Mental Deficiency, 1960, 64, pp. 609-617.

Tyler, T.: Cited in Buros, O.K., The Fifth Mental Measurements Yearbook, The Gryphon Press, Highland Park, 1959, p. 343.

Wahler, J.J., Watson, L.S. A comparison of the Shipley-Hartford as a power test with the WAIS Verbal Scale. Journal of consult. Psychol., 1962, 26, p. 105.

Walker, R.E., Hunt, W.A. and Schwartz, M.L. The difficulty of WAIS comprehension scoring. Journal of Clinical Psychology, 1965, 21, pp. 427-429.

Wallen, Norman E.: Cited in Buros, O.K. The Sixth Mental Measurements Yearbook. The Gryphon Press, Highland Park, N.J., 1965, p.462.

Warren, S.A., Collier, J.L. Suitability of the Columbia Mental Maturity Scale for mentally retarded institutionalized females, American Journal of Mental Deficiency, 1960, 64, pp. 916-920.

Weschler, D. The Measurement and Appraisal of Adult Intelligence The Williams and Wilkin Co., Baltimore, Md., 1959.

Wiens, A.N., Banaka, N.J. Estimating WAIS I.Q. from Shipley-Hartford scores: A cross-validation. Journal of Clinical Psychology, 1960, 16, p. 432.

APPROVAL SHEET

The thesis submitted by Robert Francis Eme has been read and approved by the director of the thesis. Furthermore, the final copies have been examined by the director and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

Date

Signature of Adviser